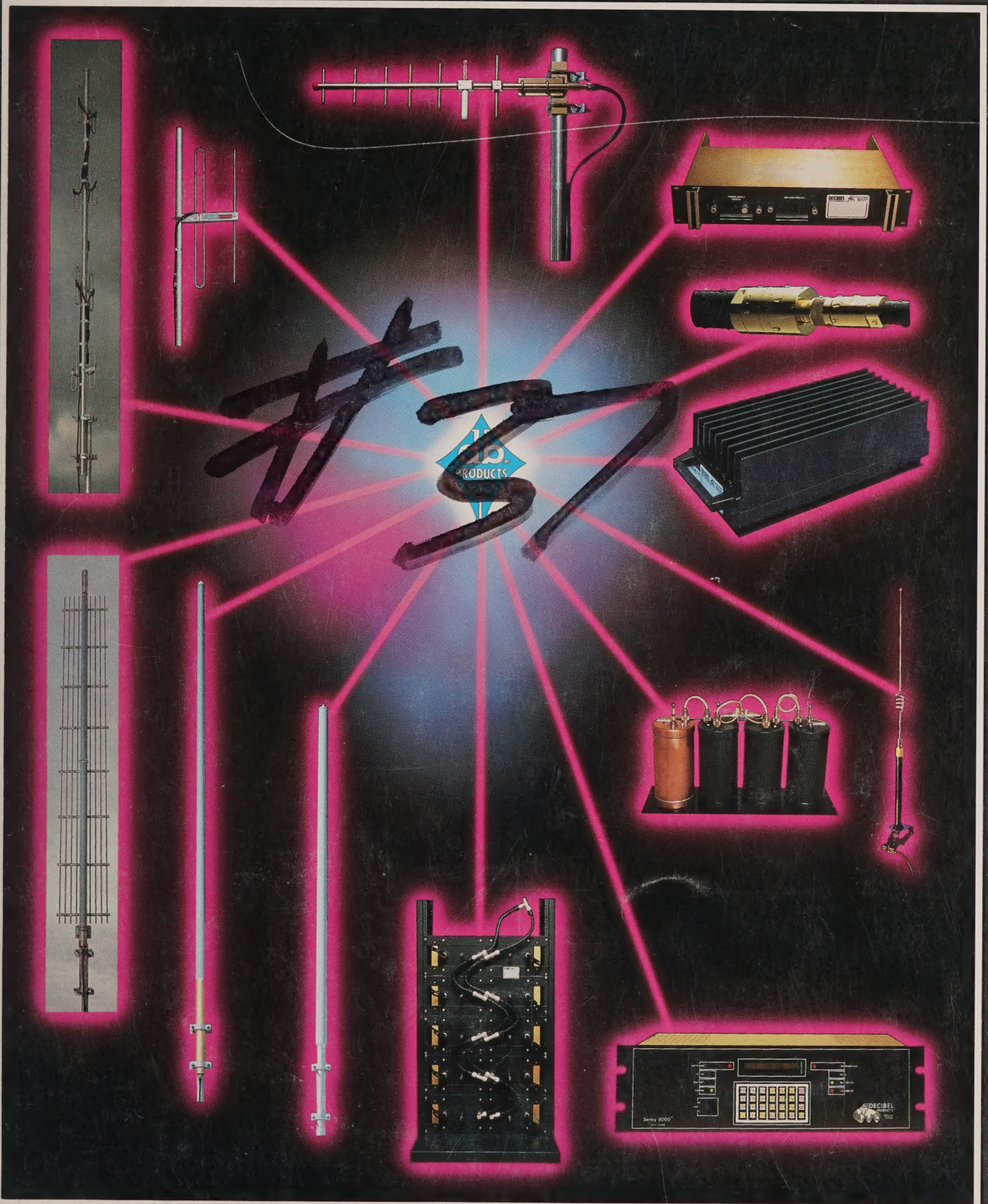
DECIBEL PRODUCTS CATALOG NUMBER 21
ANTENNAS, FILTERS AND OTHER PRODUCTS

DECIBEL


db PRODUCTS
Sentry 8000
DECIBEL PRODUCTS

#37

If you want quality, you want Decibel! Leadership since 1947.

Decibel President Dr. Peter Mailandt (right) and Marketing Vice President Bob Corwin use Computer-Aided-Design (CAD) system for company planning.

The Quest for Quality!

Since its beginning in 1947, Decibel has put quality first and foremost in the design and manufacture of its products for land mobile communications.

Our goal, then and now, is to deliver to our customers the finest two-way radio systems equipment available.

Equipment, that. . .

☐ Meets and exceeds industry standards,
☐ Gives the best performance,
☐ Stays on the air with a minimum of maintenance, and
☐ Is cost-competitive!

Our quest for quality — coupled with our use of the most advanced technology — has created thousands of satisfied customers around the world.

In fact, customers have made Decibel a world leader in base station antennas, mobile antennas, filters, duplexers, combiners, power amplifiers, remote site electronic monitors and other equipment.

Together with our Factory Authorized Warehouses, we maintain stocks of high volume products for immediate delivery. We welcome your orders. Decibel's employees and modern facilities — including our computerized engineering, manufacturing and customer service — stand ready to serve you.

If you do not find the exact product you want in this catalog, contact Decibel's marketing staff. Our Research and Design Engineers can probably fulfill your needs.

Remember, too, that our Systems Engineering Group is available to help you with advice, designs and quotations for your operational requirements.

Join the quest!

If you want quality, you want Decibel!
Leadership since 1947.

DECIBEL PRODUCTS, INC.

DR. PETER MAILANDT
PRESIDENT

SUBJECT: Open Letter From The President
On The Subject Of Prices

Dear Valued Customer:

Enclosed is Price List, PL-21C, effective June 15, 1989.

As you know, the basic materials that Decibel use in its products, such as aluminum, copper, and its alloys, historically have had peaks and valleys in price. Since early '87 the trend has been dramatically upward. Responding to this upward trend, Decibel's new prices reflect necessary increases in many, though not all, base station antennas, cavity filters, duplexers and combiners, as well as recent increases in Heliax^{R} and other coaxial cables and connectors.

Over the past few months we have reviewed economies in manufacturing and improved pricing from some of our non-basic materials vendors. As a result, some prices have not changed and several levels of increases are used, as neccessary. Our purpose has been to soften the impact of price increases for our customers as much as possible.

The Price List introduces a number of new products. They are marked with a ★ . Also, the inside front cover of the Price List now has a new Quick Index for your convenience.

Decibel appreciates the loyalty of our customers. As always, we welcome and encourage your comments and suggestions regarding our products and services, as well as your recommendations for new products. We, and our Factory Authorized Warehouses, appreciate your continued support.

Sincerely,

Dr. Peter Mailandt
President

R - Heliax is a registered trademark of Andrew Corporation.

ANTENNA SYSTEMS PRODUCTS

P.O. BOX 47128 • 3184 QUEBEC ST. • DALLAS, TEXAS 75247
(214) 631-0310 • TELEX 73-0212

★ NEW PRODUCTS

QUICK-INDEX INSIDE FRONT COVER

PRICE LIST PL-21C

for

CONSOLIDATED CATALOG No. 21

EFFECTIVE JUNE 15, 1989
(ANDREW CORP. PRODUCTS EFFECTIVE APRIL 1, 1989)

FOR
DECIBEL BASE AND MOBILE ANTENNA
SYSTEMS EQUIPMENT

DECIBEL PRODUCTS INC.

P.O. BOX 569610 DALLAS, TEXAS 75356-9610
OR 3184 QUEBEC ST., DALLAS, TEXAS 75247
SALES/MARKETING: (214) 631-0310
TELEX 73-0212 FAX (214) 631-4706
ALL OTHER DEPARTMENTS: (214) 634-8502
CHICAGO SYSTEMS ENGINEERING OFFICE:
(312) 882-2190 FAX (312) 882-3969

- EXTENDED WARRANTIES ON CERTAIN BASE STATION, ANTENNAS (SEE PAGES 1 & 2) AND POWER AMPLIFIERS (SEE PAGE 12). SEE PAGE 17 FOR DETAILS OF WARRANTIES.

★ NEW! VHF AND UHF, HEAVY DUTY, AEROGLAS™, 806-960 MHZ MIRAGE™ AND DSD™ BROADBAND OMNI-DIRECTIONAL BASE STATION ANTENNAS.

★ NEW SENTRY™ PRODUCTS! DB 8860 MODULARLY EXPANDABLE, DB 8830 SINGLE OR DUAL TX REMOTE SITE MONITORS AND DB HOST™ PC SOFTWARE.

- STATIC AND DYNAMIC LOW AND HIGH POWER CELLULAR BASE STATION AMPLIFIERS, STATIC-TO-DYNAMIC MODIFICATION OF CELLULAR BASE STATION AMPLIFIERS AND 125, 150 AND 200 WATT CELLULAR, SMR, PAGING AND CONVENTIONAL BASE STATION AMPLIFIERS.

★ NEW! 900 MHZ TRUNKED, RESERVE FREQUENCY AND RSA CELLULAR SYSTEMS PRODUCTS.

★ NEW! DB 1965 CEL-TEL™ PORTABLE TESTER FOR CELLULAR TELEPHONES. REDUCED TO $3,995.00!

NOTES: FREQUENCIES SHOWN ARE FOR PRICING PURPOSES AND DO NOT NECESSARILY INDICATE BANDWIDTH. SPECIFY EXACT OPERATING FREQUENCIES WHEN ORDERING. MINIMUM ORDER $100.00.

PL-21C
Effective June 15, 1989

DECIBEL PRODUCTS, INC.
Quick Index to Price List

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®REGISTERED, ANDREW CORPORATION

DECIBEL

BASE STATION ANTENNAS (30-960 MHz)

MINIMUM NET ORDER $100.00

Page	Model Number	Description	Gain in DB①	Frequency Range — MHz ②							
				30-50	66-88	118-150③④	150-174	200-220	406-420	450-470	470-512
5	DB201	Ground Plane, Heavy Duty***	Unity	$ 325.00	$ 300.00	$ 215.00	$ 200.00		$ 180.00	$ 180.00	$ 180.00
6	DB205	Coaxial, Heavy Duty***	Unity	350.00	320.00	280.00	266.00				
7/8	DB212-1	Side Mount (1 element)	2.5	323.00	248.00						
7/8	DB212-2	Side Mount Array (2 element)	3/6	550.00	465.00						
7/8	DB212-3	Side Mount Array (3 element)	4.5/7.5	850.00	695.00						
7/8	DB212-4	Side Mount Array (4 element)	6/9	1,260.00	1,065.00						
7/8	DB212-6	Side Mount Array (6 element)	7.5/10.5	1,875.00	1,535.00						
9	DB214	Bi-Directional Array	3.6	590.00	435.00	360.00	292.00				
9	DB214-2	Array (two phased DB214's)	6.	1,258.00	859.00	787.00	648.00				
10	DB222	Broadband Array, Omni**	3.			305.00	262.00				
10	DB222E	Broadband Array, Off-Center**	6.			305.00	262.00				
11	DB224	Broadband Array, Omni**	6.			532.00	475.00				
11	DB224E	Broadband Array, Off-Center**	9.			532.00	475.00				
11	DB224S	Dual Broadband Antenna, Omni**	3/3			532.00	475.00				
11	DB224ES	Dual Antenna, Off-Center*	6/6			532.00	475.00				
11	DB224-X	Broadband Array, Omni, Air Shippable**	6.			600.00	513.00				
12	DB225	Side Mount, Broad Pattern	5.	550.00	324.00	236.00	172.00				
12	DB225-2	Array (two phased DB225's)	8.	1,180.00	709.00	539.00	404.00				
13	DB228	Broadband Array, Omni**	9.			1,355.00	1,241.00				
13	DB228E	Broadband Array, Off-Center**	12.			1,355.00	1,241.00				
14	DB230	3 Element Yagi, Directional	7.	563.00	384.00	293.00	208.00				
14	DB230-2	Array (two phased DB230's)	10.	1,221.00	805.00	670.00	482.00				
16	DB252	Para-Corner Reflector	8.			438.00					
16	DB252-2	Array (two phased DB252's)	11.			946.00					
16	DB252-4	Array (four phased DB252's)	14.			1,992.00					
17	DB254	Para-Corner Reflector	10.						326.00	310.00	310.00
17	DB254-2	Array (two phased DB254's)	12.5						707.00	665.00	675.00
17	DB254-4	Array (four phased DB254's)	15.						1,479.00	1,385.00	1,415.00
18	DB264	Broadband Array, Omni**	6.			547.00					
18	DB264E	Broadband Array, Off-Center**	9.			547.00					
19	DB268	Broadband Array, Omni**	9.			1,530.00					
19	DB268E	Broadband Array, Off-Center**	12.			1,530.00					
22	DB286	Dual Yagi Array, 6-element	10.	1,048.00	661.00	493.00	348.00				
22	DB286-2	Array (two phased DB286's)	13.	2,216.00	1,385.00	1,047.00	754.00				
22	DB286B	Dual Yagi, Bi-Directional	5/5	1,087.00	661.00	493.00	348.00				
23	DB292	6 Element Yagi, Directional	9.5			305.00					
23	DB292-2	Yagi Array, (2 phased 292's)	12.1			680.00					
23	DB292-4	Yagi Array, (4 phased 292's)	14.7			1,470.00					
24	DB304	Broadband Array, Omni**	6.1			771.00					
24	DB304L	Broadband Array, Elliptical**	6.7			771.00					
24	DB304D	Dual Broadband, Omni**	3.2/3.2			790.00					
25	DB314	Broadband, VHF and UHF	3. /6.6			1,353.00			1,353.00	1,353.00	1,353.00
25	DB315	Broadband, VHF and UHF	6. /9.2			2,490.00			2,490.00	2,490.00	2,490.00
27	DB404	Broadband, Omni**	3.8						213.00	213.00	213.00
27	DB404L	Broadband, Elliptical**	5.						213.00	213.00	213.00
28	DB408	Broadband, Omni**	6.6						371.00	371.00	371.00
28	DB408L	Broadband, Elliptical**	7.8						371.00	371.00	371.00
28	DB408D	Dual Broadband, Omni**	3.8/3.8						411.00	411.00	411.00
28	DB408DL	Dual Broadband, Elliptical**	5. /5.						411.00	411.00	411.00
29	DB408T-4	Omni, 4.5° Downtilt**	6.5							429.00	429.00
29	DB408LT-4	Elliptical, 4.5° Downtilt**	7.7							429.00	429.00
29	DB408T-9	Omni, 9° Downtilt**	6.5							429.00	429.00
29	DB408LT-9	Elliptical, 9° Downtilt**	6.5							429.00	429.00
30	DB411	Broadband, Off-Center**	9.						336.00	308.00	308.00
31	DB413	Broadband, Off-Center**	12.						569.00	569.00	569.00
31	DB413D	Dual Broadband, Off-Center**	9. /9.						637.00	637.00	637.00
32	DB420	Broadband, Omni**	9.2						736.00	674.00	674.00
32	DB420L	Broadband, Elliptical**	10.4						736.00	674.00	674.00
32	DB420D	Dual Broadband, Omni**	6.6/6.6						803.00	736.00	736.00

SEE ANTENNA NOTES AT END OF BASE STATION ANTENNA SECTION

*TECHNICAL DATA AVAILABLE

**TWO YEAR WARRANTY. (SEE INSIDE BACK OF PRICE LIST FOR LIMITATIONS.)

***30-50 MHz DB201 ($325.00) and DB205 ($350.00) are available uncut to frequency. Use L suffix when ordering.
144-174 MHz DB201 ($192.00) and DB205 ($255.00) are available uncut to frequency. Use M suffix when ordering.
406-512 MHz DB201 ($180.00) is available uncut to frequency. Use P suffix for 450-570 MHz and N suffix for 406-512 MHz when ordering.

BASE STATION ANTENNAS (continued)

MINIMUM NET ORDER $100.00

Page	Model Number	Description	Gain in dB①	Frequency Range — MHz②						
				136-150③④	150-174	406-420	420-450	450-470	470-512	806-960
32	DB420DL	Dual Broadband, Elliptical**	6.6/6.6			$ 803.00		$736.00	$736.00	
32	DB420Q	Quad Broadband, Omni**	4×3.8			821.00		821.00	821.00	
32	DB420QL	Quad Broadband, Elliptical**	4×3.8			821.00		821.00	821.00	
33	DB426	Improved-use New Model DB636								
34	DB432	6 Element Yagi, Economy	8.					77.00		
35	DB436	6 Element Yagi, Flex Lead	10.			185.00	$185.00	175.00	175.00	
35	DB436-2	Array, (two phased DB436's)	13.			425.00	425.00	395.00	405.00	
35	DB436-4	Array, (four phased DB436's)	16.			915.00	915.00	845.00	875.00	
35	DB437	6 Element Yagi, Rugged, Flex Lead	10.			217.00	217.00	188.00	188.00	
35	DB437-2	Array (two phased DB437's)	13.			469.00	469.00	421.00	431.00	
35	DB437-4	Array (four phased DB437's)	16.			1,043.00	1,043.00	897.00	927.00	
35	DB438	6 Element Yagi, Boom Connector	10.			223.00	244.00	204.00	204.00	
35	DB438-2	Array (two phased DB438's)	13.			501.00	543.00	453.00	463.00	
106	DB492	6 Element Yagi, Economy	8.							$ 85.00
106	DB493	3 Element Yagi, Economy	6.							77.00
107	DB495	Corner Reflector	9.							300.00
107	DB495-2	Array (two phased DB495's)	12.							670.00
108	DB496	Cylindrical Parabola	13.5 dBi							377.00
108	DB496-2	Array (two phased DB496's)	16.0 dBi							824.00
106	DB498	6 Element Yagi, Rugged	9.							198.00
106	DB498-2	Array (two phased DB498's)	12.							466.00
109	DB499	7 Element Yagi, 20Db Front-to-Back	10.							218.00
★ 36	DB506	Aeroglas™, Omni (Specify frequency)	5.25		$550.00					
★ 36	DB516	Aeroglas™, Omni (144-174 MHz)	5.	$644.00	613.00					
★ 37	DB516C	Aeroglas™, Aquamarine™, Omni (156-162.55 MHz)	5.		613.00					
38	DB536	Aeroglas™, Omni, CFC™	6.			492.00		492.00	492.00	
39	DB538	Aeroglas™, Omni, CFC™	8.			647.00		647.00	647.00	
40	DB540	Aeroglas™, Omni, CFC™	10.			740.00		740.00	740.00	

BASE STATION ANTENNAS (continued), AEROGLAS™ HEAVY DUTY

OMNI DIRECTIONAL, DUAL SKIRT DIPOLE (DSD™)

Page	Model Number	Description	Gain in dB	Frequency Range — MHz②			
				136-150③	150-174	406-420	450-512
★ 37	DB616	Broadband Aeroglas, Omni, DSD (138-174 MHz)	5.3	$1,250.00	$1,250.00		
★ *	DB636	Broadband, MTD Glass, Omni, DSD	6.			$ 850.00	$ 850.00
★ *	DB638	Broadband MTD Glass, Omni, DSD	8.			1,050.00	1,050.00
★ *	DB640	Broadband Aeroglas, Omni, DSD	10.			1,350.00	1,350.00

BASE STATION ANTENNAS (continued) 806-960 MHz② CONVENTIONAL TRUNKING AND PAGING (INCLUDING NEW MIRAGE™ AND DSD™ DUAL SKIRT DIPOLE MODELS)

OMNI DIRECTIONAL — 500 WATTS ⑥

Page	Model No.	Description	Gain in dB①	PRICE
111	DB553⑥⑦	Aeroglas™, Omni, CFC™	3.5	$ 390.00
112	DB557⑥⑦	Aeroglas™, Omni, CFC™	7.5	935.00
113	DB559⑥⑦	Aeroglas™, Omni, CFC™	9.	998.00
113	DB559T3⑥⑦	DB559, 3° Downtilt	8.	1,126.00
113	DB559T6⑥⑦	DB559, 6° Downtilt	8.	1,126.00
113	DB559T10⑥⑦	DB559, 10° Downtilt	8.	1,126.00
114	DB560⑥⑦	Aeroglas™, Omni, CFC™	10.	1,103.00
114	DB560T3⑥⑦	DB560, 3° Downtilt	9.	1,258.00
114	DB560T6⑥⑦	DB560, 6° Downtilt	9.	1,258.00
114	DB560T10⑥⑦	DB560, 10° Downtilt	9.	1,258.00
★ 110	DB580 -X or -Z	Mirage™, Omni, Integral Mount⑨	Unitv	260.00
★ *	DB583 -X or -Z	Mirage™, Omni, Integral Mount⑨	3.	310.00
★ *	DB586 -X or -Z	Mirage™, Omni, Integral Mount⑨	6.	540.00
★ *	DB589 -X or -Z	Mirage™, Omni, Integral Mount⑨	9.	798.00
★ *	DB803Q	Quad DB803 -X or -Z, DSD⑤	3./3./3./3.	1,871.00
★ *	DB806 -X or -Z	Broadband, Omni, DSD, MTD Glass⑤⑦	6.	700.00
★ *	DB806TL -X or -Z	Triple DB806, DSD⑤	6./6./6.	2,674.00
★ *	DB806D -X or -Z	Broadband, Dual, Omni, DSD⑤	6./6.	1,755.00
★ *	DB809 -X or -Z	Broadband, Omni, DSD, MTD Glass⑤⑦	9.	1,088.00
★ *	DB859⑥⑦	Min. Tip Deflection, Omni, MTD Glass	9.	1,048.00
129	DB860⑥⑦	Min. Tip Deflection, Omni, MTD Glass	10.	1,303.00

DIRECTIONAL — 500 WATTS ⑥

Page	Model No.	Description	Gain in dB①	PRICE
115	DB561⑥⑦	170° 25dB Front-to-Back	11.	$1,569.00
115	DB562⑥⑦	150° 25dB Front-to-Back	12.	1,594.00
115	DB563⑥⑦	135° 25dB Front-to-Back	13.	1,619.00
116	DB563S10⑦	135° 20dB Front-to-Back	10.5	1,460.00
117	DB564⑥⑦	120° 25dB Front-to-Back	14.	1,644.00
117	DB564T3⑦	DB564, 3° Downtilt	13.	1,972.00
117	DB564T6⑦	DB564, 6° Downtilt	13.	1,972.00
117	DB564T10⑦	DB564, 10° Downtilt	13.	1,972.00
118	DB564S12⑦	120°, 25dB Front-to-Back	12.	1,380.00
119	DB567⑥⑦	60°, 25dB Front-to-Back	17.	1,827.00
121	DB567Y⑥⑦	Two DB567's Back-to-Back	17./17.	3,665.00
120	DB567R90⑥⑦	DB567 Reverse Screen, 190°	10.	1,995.00
126	DB833-F⑧	105°, Tx & Rx, Broad Band	9.	753.00
★ 126	DB833F-F⑧	105°, Tx & Rx, Flange, Non-Press.	9.	1,013.00
★ 126	DB833P-F⑧	105°, Tx & Rx, Flange, Press.	9.	1,048.00
★ 128	DB834-F⑧	105°, Tx & Rx, Broad Band	10.	911.00
★ 128	DB834F-F⑧	105°, Tx & Rx, Flange, Non-Press.	10.	1,171.00

*TECHNICAL DATA AVAILABLE
**TWO YEAR WARRANTY. (SEE INSIDE BACK OF PRICE LIST FOR LIMITATIONS.)

BASE STATION ANTENNA NOTES

① Gain is with respect to a vertical half wave dipole, except as noted.
② **Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering specify exact operating frequency(s) for all items.**
③ Gain reduced slightly in 136-150 MHz band. Some products are special.
④ 118-136 MHz available as Special Order. Contact plant for details.
⑤ DSD (Dual Skirt Dipoles), 95-100 MHz Bandwidth, Depending on Frequency Range.
⑥ Order special - Q models with EIA flange for 1,000 watts rating.
⑦ For EIA flange — add $260.00 list price. Pressurized, except MTD glass — add $295.00 list price.
⑧ Available with pipe-to-pipe mounting option DB5080— $115.00 list price.
⑨ For economy model radio stations and repeaters, jumper cable not included, dual purpose mount.
⑩ Weatherhead termination option — for DB803, 806 and 809 single and multiple models. Add $75.00 list price.

Termination: Each antenna has a short flexible lead terminated with a **Type N male** connector. (Consult catalog for exceptions.) UHF termination is available on special order (using UG-83 Adapter - UHF male).
Mounting Clamps: Most antennas are supplied with mounting clamps. (Consult catalog for exceptions.)
Corrosion Protection: For antennas that are to be operated in corrosive atmosphere an Iridite chemical bath treatment is recommended. For this treatment add 30% (with a $100.00 net minimum) to the price of the antenna. Aeroglas™ antennas include Iridite treated support pipe. (Epoxy painted antennas, an additional 30% or $100.00 minimum, require Iridite treatment to the aluminum before paint is applied.)
Precipitation Static: Precipitation static can be further reduced by wrapping radiator elements with polytape. Add 30% (with a $100.00 net minimum) to antenna price for polytape wrapping.
Frequency: Specify operating frequency on orders. All antennas are tested for minimum VSWR before shipment.
Dipole Stabilizers: VHF External Dipole Antennas DB222, 224, 228, 264, 268 and 304 can be ordered with two stabilizers (12088 or 12089) per dipole for extreme environments. Consult Customer Service.

DECIBEL

★ – NEW PRODUCT

MINIMUM ORDER $100.00

ANTENNA MOUNTING KITS, CLAMPS AND BRACKETS

Page	Model No.	Description	Price
175	DB365-OS	Clamp set of two (single bolt)	$ 47.00
175	DB365-NS	Clamp set of two (U-bolt)	42.00
175	DB365W	Clamp set of two, wood pole or wall	64.00
175	DB365-SP5	Clamp set of two, up to 5″ O.D.	70.00
175	DB365-SP7	Clamp set of two, up to 7″ O.D.	90.00
★	DB366	Clamp set of three, same style as DB365-OS	70.00
175	DB370	Clamp set of two, all straps, no weld	45.00
175	DB371	Clamp set of three, all straps, no weld	68.00
★	DB375	Clamp set of two, for horizontal to vertical, 3″ O.D.	72.00
175	DB5001	Side Mount Kit for DB222, 224, DB264, 304, 314 and 315 antennas. up to 3″ O.D.	173.00
175	DB5001-SP5	up to 5″ O.D.	233.00
175	DB5001-SP7	up to 7″ O.D.	240.00
175	DB5002	Side Mount Kit for DB506 and DB516.	173.00
175	DB5004	Adjustable Side Mount Kit (two 10′ supports). Heavy duty. up to 2⅞″ O.D.	364.00
175	DB5004-5	up to 5″ O.D.	511.00
175	DB5007	Side Mount Kit for DB404, 426, 536, 580, 583, 586, 803, 806 antennas. up to 3″ O.D.	136.00
175	DB5007-SP5	up to 5″ O.D.	183.00
175	DB5009	Mount for horizontal mounting, DB436-2, 437-2, 438-2.	103.00
175	DB5012	Side Mount Kit for DB408, DB411, 413, 420 antennas. up to 3″ O.D.	169.00
175	DB5012-SP5	up to 5″ O.D.	195.00

ANTENNA MOUNTING KITS, CLAMPS AND BRACKETS (cont.)

Page	Model No.	Description	Price
175	DB5018	Mount for quad mounting DB436, 7, 8 - 4 antenna	$202.00
175	DB5020	Mount for quad mounting DB292-4	310.00
175	DB5080	Pipe Mount Kit for DB833/834 antennas.	115.00
175	11653	Vee Bolt Clamp Kit, of two for 1-3″ O.D.	31.00
★ 175	11653-3-½	Vee Bolt Clamp Kit, of two for up to 3½″ O.D.	50.00
175	11653-4-IN	Vee Bolt Clamp Kit, of two for up to 4″ O.D.	75.00
★ 175	11653-4-½	Vee Bolt Clamp Kit, of two for up to 4½″ O.D.	75.00
175	11653-5-IN	Vee Bolt Clamp Kit, of two for up to 5″ O.D.	83.00
★ 175	11653-5-½	Vee Bolt Clamp Kit, of two for up to 5½″ O.D.	83.00
175	11653-6-IN	Vee Bolt Clamp Kit, of two for up to 6″ O.D.	89.00
★ 175	11653-6-½	Vee Bolt Clamp Kit, of two for up to 6½″ O.D.	89.00
175	11653-7-IN	Vee Bolt Clamp Kit, of two for up to 7″ O.D.	91.00
★ 175	11653-7-½	Vee Bolt Clamp Kit, of two for up to 7½″ O.D.	91.00
175	11653-8-IN	Vee Bolt Clamp Kit, of two for up to 8″ O.D.	93.00
★ 175	11653-8-½	Vee Bolt Clamp Kit, of two for up to 8½″ O.D.	93.00
175	11653-9-IN	Vee Bolt Clamp Kit, of two for up to 9″ O.D.	99.00

COPPER, CORRUGATED, FOAM-DIELECTRIC COAXIAL CABLE (ALL RADIAX® AND ACCESSORIES NOW AVAILABLE, CONSULT PLANT.②,③)

Page	Model Number	Description ①	Line Connectors		Jumper Connectors		Price
			Top	Bottom	Line	Equipment	
169	DB2047	FSJ1-50 ¼″ Superflexible HELIAX®, jacketed cable only					$1.44 per foot
169	DB2047-PK	Connector Kit Installed FSJ1-50, no jumper	NM	NM	n/a	n/a	53.00 kit
★	DB2047-NMTCPK	Connector Kit Installed FSJ1-50, no jumper	NM	TNC-M	n/a	n/a	77.00 kit
169	DB2048	FSJ4-50B ½″ Superflexible HELIAX®, jacketed cable only					$3.22 per foot
169	DB2048-PK	Connector Kit Installed FSJ4-50B, no jumper	NM	NM	n/a	n/a	101.00 kit
167	DB2068	LDF4-50A ½″ foam COPPER HELIAX®, jacketed cable only					$2.15 per foot
★	DB2068C	LDF4-50A 43818-41, for Cellular 824-894 MHz, cable only					$2.30 per foot
167	DB2068-NFNFPK	Connector Kit Installed LDF4-50A, no jumper	NF	NF	n/a	n/a	100.00 kit
167	DB2068-UFNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-F	NF	n/a	n/a	99.80 kit
167	DB2068-NMNFPK	Connector Kit Installed LDF4-50A, no jumper	NM	NF	n/a	n/a	100.00 kit
167	DB2068-UMNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-M	NF	n/a	n/a	99.80 kit
167	DB2068-NFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. DB8 jumper	NF	NF	NM	UHF-M	123.00 kit
167	DB2068-UFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. DB8 jumper	UHF-F	NF	NM	UHF-M	122.80 kit
167	DB2068-NMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. DB8 jumper	NM	NF	NM	UHF-M	123.00 kit
167	DB2068-UMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. DB8 jumper	UHF-M	NF	NM	UHF-M	122.80 kit
167	DB2068-NFNFW2	Connector Kit Installed LDF4-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	130.00 kit
167	DB2078	LDF5-50A ⅞″ foam COPPER HELIAX®, jacketed cable only					$5.60 per foot
★	DB2078C	LDF5-50A 42150B-48 for Cellular 824-894 MHz, cable only					$6.00 per foot
167	DB2078-NFNFPK	Connector Kit Installed LDF5-50A, no jumper	NF	NF	n/a	n/a	171.00 kit
167	DB2078-UFNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-F	NF	n/a	n/a	170.50 kit
167	DB2078-NMNFPK	Connector Kit Installed LDF5-50A, no jumper	NM	NF	n/a	n/a	171.00 kit
167	DB2078-UMNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-M	NF	n/a	n/a	170.50 kit
167	DB2078-NFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. DB8 jumper	NF	NF	NM	UHF-M	196.00 kit
167	DB2078-UFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. DB8 jumper	UHF-F	NF	NM	UHF-M	195.50 kit
167	DB2078-NMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. DB8 jumper	NM	NF	NM	UHF-M	196.00 kit
167	DB2078-UMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. DB8 jumper	UHF-M	NF	NM	UHF-M	195.50 kit
167	DB2078-NFNFW2	Connector Kit Installed LDF5-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	203.00 kit
167	DB2086	LDF7-50A 1⅝″ foam copper HELIAX®, jacketed cable only					$13.20 per foot
★	DB2086C	LDF7-50A 42151A-18 for Cellular 824-894 MHz, cable only					$14.00 per foot
167	DB2086-PK	Connector Kit Installed LDF7-50A, no jumper	NF	NF	n/a	n/a	498.00 kit
167	DB2088	LDF6-50 1¼″ foam copper HELIAX®, jacketed cable only					$9.70 per foot
★ 167	DB2088C	LDF6-50 205360-1 for Cellular 824-894 MHz, cable only					$10.38 per foot
167	DB2088-PK	Connector Kit Installed LDF6-50, no jumper	NF	NF	n/a	n/a	287.00 kit

① Connector Kits on Foam-Dielectric cables (½″, ⅞″, 1¼″ and 1⅝″) as well as Superflexible cables (¼″ and ½″) include VaporWrap® and jumper specified. For tie wires see 11639 or 11649 model numbers.

② HELIAX® and RADIAX® are registered trademarks of Andrew Corp.

③ RADIAX® Cable: RXL4-1 $3.12/ft., RXL4-1RN $4.20/ft., RXL4-2 $3.65/ft., RXL4-2RN $4.80/ft., RXL4-3 $3.65/ft., RXL4-3RN $4.80/ft., RXL5-1 $6.55/ft., RXL5-1RN $8.30/ft. ASK ABOUT NEW ⅜ INCH LOW DENSITY RADIAX PRODUCTS. New style "L" version uses the same type connectors as the LDF series cables.

COPPER, CORRUGATED, AIR DIELECTRIC CABLE

Page	Model Number	Description ①	Connectors		Price
			Top	Bottom	
168	DB2074	HJ5-50 ⅞″ air copper HELIAX® — jacketed (for cellular order 25831-3, $7.10/ft.)			$6.67 per foot
168	DB2074-PK	Connector Kit installed HF5-50	NF	NF	249.00
168	DB2077	HJ7-50A 1⅝″ air copper HELIAX® — jacketed (for cellular order 25816A-31, $15.20/ft.)			$14.35 per foot
168	DB2077-PK	Connector Kit installed HJ7-50A	NF	NF	539.00
168	DB2089	HJ12-50 2¼″ air copper HELIAX® — jacketed (for cellular order 207760, $21.20/ft.)			$20.10 per foot
168	DB2089-PK	Connector Kit installed HJ12-50	NF	NF	700.00

BULK ORDERS:
⅞″ cables — 351 to 2500 feet shipped on disposable reel
½″ cables — 501 to 4000 feet shipped on disposable reel

★ — NEW PRODUCT

MINIMUM ORDER $100.00

COAXIAL CABLE ASSEMBLIES

Page	Model Number	Description	Top Connector (Antenna)	Bottom Connector	Price ($) Cable	Price Connector Kit
170	DB2029	DB8A/U Cable Only			.88/ft.	
170	DB2029-NFNF	DB8A/U, Connectors Installed	NF	NF	.88/ft. plus	$28.00
170	DB2029-NMNF	DB8A/U, Connectors Installed	NM	NF	.88/ft. plus	28.00
170	DB2029-NFUM	DB8A/U, Connectors Installed	NF	UHF-M	.88/ft. plus	27.00
170	DB2029NMUM	DB8A/U, Connectors Installed	NM	UHF-M	.88/ft. plus	27.00
170	DB2029-UMUM	DB8A/U, Connectors Installed	UHF-M	UHF-M	.88/ft. plus	26.00
170	DB2029-NMNM	DB8A/U, Connectors Installed	NM	NM	.88/ft. plus	28.00
170	DB2040	VB8 Vapor-Bloc® Cable Only			.98/ft.	
170	DB2040-NFNF	Vapor-Bloc®, Connectors Inst'l'd	NF	NF	.98/ft. plus	28.00
170	DB2040-NMNF	Vapor-Bloc®, Connectors Inst'l'd	NM	NF	.98/ft. plus	28.00
170	DB2040-NFUM	Vapor-Bloc®, Connectors Inst'l'd	NF	UHF-M	.98/ft. plus	27.00
170	DB2040-NMUM	Vapor-Bloc®, Connectors Inst'l'd	NM	UHF-M	.98/ft. plus	27.00
170	DB2040-UMUM	Vapor-Bloc®, Connectors Inst'l'd	UHF-M	UHF-M	.98/ft. plus	26.00
170	DB2040-NMNM	Vapor-Bloc®, Connectors Inst'l'd	NM	NM	.98/ft. plus	28.00

***NOTE: Model Nos. DB2029 and DB2040 include two connectors and two 4 inch Vapor-Wrap® when connector kit ordered. For tie wires see 11639, 11649 or 11629 model numbers.**

PHASING HARNESS FOR TWO SINGLE DIRECTIONAL ANTENNAS

Page	Model Number	Description	Frequency Range — MHz ② 150-174	406-445	450-470	470-512	806-960
★	14252-2	To phase 2 ea. DB 252's	$80.00				
★	14254-2	To phase 2 ea. DB 254's		$65.00	$55.00	$65.00	
★	14292-2	To phase 2 ea. DB 292's	80.00				
★	14436/7-2	To phase 2 ea. DB 436's or DB 437's		65.00	55.00	65.00	
★	14438-2	To phase 2 ea. DB 438's		65.00	55.00	65.00	
★	14495-2	To phase 2 ea. DB 495's					$80.00
★	14496-2	To phase 2 ea. DB 496's					80.00
★	14498-2	To phase 2 ea. DB 498's					80.00
★	14499-2	To phase 2 ea. DB 499's					80.00

PHASING HARNESS FOR TWO SETS OF DUAL DIRECTIONAL ANTENNAS

Page	Model Number	Description	Frequency Range — MHz ② 150-174	406-445	450-470	470-512
★	14252-4	To phase 2 sets of DB 252-2's	$120.00			
★	14254-4	To phase 2 sets of DB 254-2's		$70.00	$60.00	$70.00
★	14292-4	To phase 2 sets of DB 292-2's	120.00			
★	14436/7-4	To phase 2 sets of DB 436-2's or DB 437-2's		70.00	60.00	70.00

3 TO 30 FT FLEXIBLE LEAD COXIAL CABLES, INCLUDES HELIAX® BRAND FOAM COPPER COAXIAL CABLE ASSEMBLIES ①

Page	Model Number	Description, Ft.	Connector	Connector	Price
170	DB11386	RG8 Type Flexible Cable, 8′	N-Male	N-Male	$33.00
170	DB11387	RG8 Type Flexible Cable, 8′	N-Male	N-Female	34.00
170	DB11388	RG8 Type Flexible Cable, 8′	N-Male	UHF-Male	30.00
170	DB11391	RG214 Type Double Shield, 8′	N-Male	N-Male	42.00
170	DB11392	RG214 Type Double Shield, 8′	N-Male	N-Female	44.00
170	DB11393	RG214 Type Double Shield, 8′	N-Male	UHF-Male	41.00
170	DB11394	RG214 Type Double Shield, 8′	UHF-Male	UHF-Male	33.00
170	DB11607	RG142 Type Double Shield, 1.5″	N-Male	N-Male	22.00
170	DB11608	RG142 Type Double Shield, 3′	N-Male	N-Male	25.00
170	DB11396	RG142 Type Double Shield, 8′	BNC-Male	UHF-Male	46.00
170	DB11397	RG142 Type Double Shield, 8′	BNC-Male	N-Male	48.00
170	DB11398	RG142 Type Double Shield, 8′	BNC-Male	N-Female	50.00
170	DB11882	¼″ HELIAX Superflexible Cable, 8′	N-Male	N-Male	63.00
170	DB11883	¼″ HELIAX Superflexible Cable, 8′	N-Male	UHF-Male	61.00
170	DB11884	¼″ HELIAX Superflexible Cable, 8′	UHF-Male	UHF-Male	57.00
170	DB11885	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	UHF-Male	56.00
170	DB11886	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	N-Male	60.00
170	DB11889	¼″ HELIAX Superflexible Cable, 8′	Phono	UHF	52.00
★	DB11881-15	¼″ HELIAX Superflexible Cable, 15′	N-Male	TNC-Male	97.00

Page	Model Number	Description, Ft.	Connector	Connector	Price
170	DB11888	½″ Superflexible, 8′	N-Male	N-Female	$121.00
170	DB11891	½″ Superflexible, 8′	N-Male	N-Male	120.00
170	DB11891-3	½″ Superflexible, 3′	N-Male	N-Male	103.00
170	DB11891-6	½″ Superflexible, 6′	N-Male	N-Male	113.00
171	DB1891-10	½″ Superflexible, 10′	N-Male	N-Male	126.50
171	DB11891-15	½″ Superflexible, 15′	N-Male	N-Male	142.50
171	DB11891-20	½″ Superflexible, 20′	N-Male	N-Male	158.50
171	DB11891-25	½″ Superflexible, 25′	N-Male	N-Male	174.50
171	DB11891-30	½″ Superflexible, 30′	N-Male	N-Male	190.50
171	DB11887	½″ LDF Foam, 6′	N-Male	N-Female	97.00
171	DB11890	½″ LDF Foam, 6′	N-Male	N-Male	97.00
171	DB11890-3	½″ LDF Foam, 3′	N-Male	N-Male	91.00
171	DB11890-10	½″ LDF Foam, 10′	N-Male	N-Male	107.00
171	DB11890-15	½″ LDF Foam, 15′	N-Male	N-Male	117.25
171	DB11890-20	½″ LDF Foam, 20′	N-Male	N-Male	128.50
171	DB11890-25	½″ LDF Foam, 25′	N-Male	N-Male	139.25
171	DB11890-30	½″ LDF Foam, 30′	N-Male	N-Male	150.00

CONNECTORS FOR COAXIAL CABLE

Page	Model Number	Description	Quality In Package	Price
173	11301	PL259, Type UHF Male	pkg. of 12	$ 31.50
173	11302	UG175, Reducer insert for PL259	pkg. of 24	18.00
173	11303	PL258, Type UHF Junction	pkg. of 6	25.00
173	11304	M358, Type UHF Tee	pkg. of 2	21.00
173	11305	UG1185, Type N Male	pkg. of 3	25.00
173	11306	UG1186, Type N Female	pkg. of 3	31.50
173	11307	UG29, Type N Junction	pkg. of 4	48.00
173	11308	UG146, Adaptor Connector	pkg. of 2	37.00
173	11309	UG83, Adaptor Connector	pkg. of 2	37.00
173	11310	34525-1001 N-Male connector	pkg. of 2	18.00
173	11311	UG88 BNC Male for RG58	pkg. of 5	19.00
173	11312	UG536 Type N Male for RG142	pkg. of 4	24.00
173	11313	UG57 N Male-N Male adaptor	pkg. of 2	31.50
173	11319	UG28 Type N Tee Junction	pkg. of 2	49.50
173	11325	UG 274 GNC-TEE Adaptor	pkg. of 2	18.00
173	11328	UG270D/U, Adaptor Connector	pkg. of 2	38.00
171	11350	41SW, Type N Male (for ¼″ Superflexible)	pkg. of 1	12.50
171	11351	41SP, UHF Male (for ¼″ Superflexible)	pkg. of 1	8.40
171	11352	40622, BNC Male (for ¼″ Superflexible)	pkg. of 1	10.50
★	11574	41SWT, TNC Male (for ¼″ Superflexible)	pkg. of 1	33.00
171	11365	44ASR, ⅞″ EIA Flange (for ½″ Superflexible)	pkg. of 1	120.00
171	11369	44ASW, Type N Male (for ½″ Superflexible)	pkg. of 1	33.50
171	11376	44ASN, Type N Female (for ½″ Superflexible)	pkg. of 1	34.50
171	11377	44ASP, UHF Male (for ½″ Superflexible)	pkg. of 1	34.50
171	11378	44ASU, UHF Female (for ½″ Superflexible)	pkg. of 1	34.50
171	11379	49600, R/Angle N Male (for ½″ Superflexible)	pkg. of 1	68.80
★	11364	L44M, Type LC Male (for ½″ foam copper HELIAX®)	pkg. of 1	102.00
171	11370	L44P, TypeUHF Male (for ½″ foam copper HELIAX®)	pkg. of 1	25.00
171	11371	L44U, Type UHF Female (for ½″ foam copper HELIAX®)	pkg. of 1	25.60
171	11372	L44W, Type N Male (for ½″ foam copper HELIAX®)	pkg. of 1	28.80

CONNECTORS FOR COAXIAL CABLE (continued)

Page	Model Number	Description	Quality In Package	Price
171	11373	L44N, Type N Female (for ½″ foam copper HELIAX®)	pkg. of 1	$ 28.80
171	11374	L44Z, Splice (for ½″ foam copper HELIAX®)	pkg. of 1	90.00
171	11375	L44R, ⅞″ EIA Flange (for ½″ foam copper HELIAX®)	pkg. of 1	103.00
172	11380	L45P, Type UHF Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	66.50
172	11381	L45U, Type UHF Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	66.50
172	11382	L45W, Type N Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	70.00
172	11383	L45N, Type N Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	70.00
172	11384	L45Z, Splice (for ⅞″ foam copper HELIAX®)	pkg. of 1	118.00
172	11385	L45R, ⅞″ EIA Flange (for ⅞″ foam copper HELIAX®)	pkg. of 1	108.00
172	11363	L46W, N Male (for 1¼″ foam copper HELIAX®)	pkg. of 1	122.00
172	11390	L46N, N Female (for 1¼″ foam copper HELIAX®)	pkg. of 1	122.00
172	11395	L46Z, Splice (for 1¼″ foam copper HELIAX®)	pkg. of 1	215.00
172	11664	L46S, ⅞″ EIA Flange (for 1¼″ foam copper HELIAX®)	pkg. of 1	205.00
172	11336	L47N, Type N Jack Female (for 1⅝″ foam copper HELIAX®)	pkg. of 1	225.00
172	11337	L47Z, Splice (for 1⅝″ foam copper HELIAX®)	pkg. of 1	315.00
172	11338	L47R, 1⅝″ EIA Flange (for 1⅝″ foam copper HELIAX®)	pkg. of 1	258.00
172	11355	75AR, EIA Flange (for ⅞″ air cable)	pkg. of 1	115.00
172	11356	75AN, Type N Jack Female (for ⅞″ air cable)	pkg. of 1	90.00
172	11357	75AW, Type N Plug Male (for ⅞″ air cable)	pkg. of 1	92.00
172	11358	75AZ, Splice (for ⅞″ air cable)	pkg. of 1	135.00
172	11366	87S, Reducer connector to ⅞″ (for 1⅝″ air cable)	pkg. of 1	280.00
172	11367	87N, Type N Jack Female (for 1⅝″ air cable)	pkg. of 1	235.00
172	11368	87Z, Splice (for 1⅝″ air cable)	pkg. of 1	340.00
172	11670	82N, Type N Female (for 2¼″ air copper HELIAX®)	pkg. of 1	300.00
172	11671	82R, Type 1⅝″ EIA Flange (for 2¼″ air copper HELIAX®)	pkg. of 1	310.00

HELIAX is a registered trademark of Andrew Corp.

①HELIAX leads have Andrew connectors, except phono type.

②Frequencies shown are for pricing purposes only and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.

TWO ANTENNA MATCHING TRANSFORMERS

Page	Ordering Number	Frequency Range MHz[1]	Connectors		Price
			Top/Tee	Final	
	11690-1	30-299	N FEMALE	N MALE	$93.00
	11690-2	30-299	N FEMALE	N FEMALE	93.00
	11690-3	30-299	UHF FEMALE	N MALE	75.00
	11690-4	30-299	UHF FEMALE	N FEMALE	75.00
	11690-5	30-299	UHF FEMALE	UHF MALE	75.00
	11690-6	30-299	N FEMALE	UHF MALE	93.00

TWO ANTENNA MATCHING TRANSFORMERS WITH VB-8 PHASING HARNESS

Page	Ordering Number	Frequency Range MHz[1]	Connectors		Price
			Feeders	Final	
	11680-1	30-299	UHF MALE	UHF MALE	$139.00
	11680-2	30-299	UHF MALE	N MALE	139.00
	11680-3	30-299	N FEMALE	N MALE	143.00
	11680-4	30-299	N MALE	N FEMALE	143.00
	11681-1	299-960	N FEMALE	N MALE	98.00
	11681-2	299-960	N MALE	N FEMALE	98.00
	11681-3	299-960	N FEMALE	N FEMALE	98.00
	11681-4	299-960	N MALE	N MALE	98.00

[1] **Exact frequency and the two identical DB antenna model numbers to be phased must be provided.**

[2] All connectors required must be specified. Frequencies in 299-960 MHz must be N-type connectors.

[3] The 11680 models have up to 19 ft. 50 OHM cable each side of the transformer.

[4] The 11681 models have up to 36 inches 50 OHM cable each side of the transformer.

[5] When matching three or more identical DB antennas, consult DB Systems Engineering for proper combination of above (special order).

MISCELLANEOUS KITS AND ACCESSORIES

Page	Model Number	Description	Quantity In Package	Price
170	11601	RG-214 Type Cable	25′ Length	$ 56.00
170	11602	RG-214 Type Cable	50′ Length	110.00
48	11603	RG-214 Type Interconnect Cable for DB4002A Cavities	pkg. of 1	23.00
48	11604	RG-214 Type Interconnect Cable for DB4002B Cavities	pkg. of 1	23.00
172	11616	RG142 Type Cable	25′ length	85.00
172	11617	RG142 Type Cable	50′ length	169.00
174	11621	Duplexer Cable Assembly	pkg. of 1	63.00
174	11641	Hoisting Grip ½″ jacketed copper cable 43094	pkg. of 1	28.00
174	11642	Hoisting Grip ⅞″ jacketed copper cable 19256B	pkg. of 1	41.00
174	11643	Hoisting Grip 1¼″ & 1⅝″ jacketed copper cable 24312A	pkg. of 1	50.00
174	11640	Grounding Kit, ½″ copper cable 204989-1	pkg. of 1	21.00
174	11644	Grounding Kit, ⅞″ copper cable 204989-2	pkg. of 1	26.50
174	11662	Grounding Kit, 1¼″ copper cable 204989-3	pkg. of 1	27.50
174	11645	Grounding Kit, 1⅞″ copper cable 204989-4	pkg. of 1	27.50
174	11901	Filament Tape, ½″	pkg. of 1	17.00
174	11902	Aluminum Tape, ¾″	pkg. of 1	26.00
174	11903	Electrical Tape, Cold Weather, ¾″	pkg. of 4	29.00
174	11904	Scotchkote Sealant	pkg. of 1	26.00
174	11905	RTV Sealant	pkg. of 1	19.00
174	11906	Silicone Compound	pkg. of 1	27.00
174	11907	Shrink Tube for ½″, RG8 type cable	pkg. of 4	12.00
174	11908	Shrink Tube for ⅞″ type cable	pkg. of 4	13.00
174	11317	Vapor Wrap 15 - 3″ × 4″ and 15 - 3″ × 8″ pieces	pkg. of 30	42.00
174	11316	Vapor Wrap 3″ × 50 Ft. Roll	50 Ft. Roll	61.00
172	11667-1	Hardware kit, ⅜″, For Hanger Kits	pkg. of 10	13.00

MISCELLANEOUS KITS AND ACCESSORIES (Continued)

Page	Model Number	Description	Quantity In Package	Price
174	11646	Wall/Roof Feed Through, ¼″, ⅜″, ½″ cable 40656-3	pkg. of 1	$48.00
174	11647	Wall/Roof Feed Through, ⅞″ cable 40656-1	pkg. of 1	49.00
174	11663	Wall/Roof Through, 1¼″ cable 40656-5	pkg. of 1	60.00
174	11648	Wall/Roof Through, 1⅝″ cable 40656-2	pkg. of 1	70.00
★	11629	Tie kit TYZ27M, Radiation, U.V. resistant	pkg. of 20	90.00
174	11649	Tie Wires, Copperweld	pkg. of 100	19.00
174	11638	Nylon cable tie kit, black, 40417	pkg. of 50	33.20
174	11639	27290A Jacketed Tie Wires	pkg. of 20	7.00
174	11651	12395-1 Wraplock, 100 ft.①	pkg. of 1	46.00
174	11658	Andrew 43211 ½″ Hanger Kit	pkg. of 10	30.00
174	11656	Andrew 42396A-5 ⅞″ Hanger Kit	pkg. of 10	40.00
174	11661	Andrew 42396A-1 1¼″ Hanger Kit	pkg. of 10	40.00
174	11655	Andrew 42396A-2 1⅝″ Hanger Kit	pkg. of 10	40.00
174	11654	Andrew 31768-A ⅞″ and 1⅝″ Angle Tower Adaptor	pkg. of 10	61.00
174	11652	Stainless steel straps 1½″-3½″ (quick release)①	pkg. of 10	32.50
174	11360	Stainless steel straps 1″-2″①	pkg. of 10	22.00
174	11361	Stainless steel straps 2″-3″①	pkg. of 10	24.50
174	11362	Stainless steel straps 3″-4″①	pkg. of 10	28.20
174	11665-1	Andrew 206706-1 ½″ Cable Snap-In Hanger	pkg. of 10	35.00
174	11665-2	Andrew 206706-2 ⅞″ Cable Snap-In Hanger	pkg. of 10	45.00
174	11665-3	Andrew 206706-3 1¼″ Cable Snap-In Hanger	pkg. of 10	45.00
174	11665-4	Andrew 206706-4 1⅝″ Cable Snap-In Hanger	pkg. of 10	45.00
172	11666-1	Pin pack, for L44N, N-Female	pkg. of 5	26.50
172	11666-2	Pin pack, for L44W, N-Male	pkg. of 5	8.50
172	11666-3	Pin pack, for L45N, N-Female	pkg. of 5	63.00
172	11666-4	Pin pack, for L45W, N-Male	pkg. of 5	58.00

①When using straps to secure cables also use hanger kits.

BANDPASS CAVITIES

Page	Model Number	Description	Frequency Range — MHz①							
			30-50	66-88	120-150	150-174	225-400	406-420	450-512	806-960
44,45	DB4001-1	Single Cavity with Adjustable Loops				$ 178.00				
44,45	DB4001-2	Dual Cavity with Adjustable Loops				364.00				
44,45	DB4001-3	Triple Cavity with Adjustable Loops				518.00				
48	DB4002	Single Cavity with Adjustable Loops			$ 845.00	832.00		$ 832.00	$ 832.00	
★48	DB4002-2	Dual Cavity with Adjustable Loops			1,700.00	1,674.00		1,674.00	1,674.00	
44,45	DB4011-1	Single Cavity with Adjustable Loops		$268.00						
44,45	DB4011-2	Dual Cavity with Adjustable Loops		577.00						
44,45	DB4011-3	Triple Cavity with Adjustable Loops		845.00						
44,45	DB4015-1	Single Cavity with Adjustable Loops			200.00					
44,45	DB4015-2	Dual Cavity with Adjustable Loops			437.00					
44,45	DB4015-3	Triple Cavity with Adjustable Loops			668.00					
44,45	DB4018-1	Single Cavity with Adjustable Loops					$175.00			
44,45	DB4018-2	Dual Cavity with Adjustable Loops					386.00			
44,45	DB4018-3	Triple Cavity with Adjustable Loops					583.00			

★ - NEW PRODUCT *TECHNICAL DATA AVAILABLE
① Figures do not necessarily indicate bandwidth — for pricing purposes only. Contact plant for details for other frequency ranges.
Shape Factored Filter is a registered trademark of Decibel Products, Inc.

BANDPASS CAVITIES (continued)

MINIMUM NET ORDER $100.00

Page	Model Number	Description	Frequency Range — MHz①							
			30-50	66-88	120-150	150-174	225-400	406-420	450-512	806-960
49	DB4020-1	Single Cavity with Adjustable Loops						$ 187.00		
49	DB4020-2	Dual Cavity with Adjustable Loops						416.00		
49	DB4020-3	Triple Cavity with Adjustable Loops						636.00		
49	DB4021-1	Single Cavity with Adjustable Loops							$ 187.00	
49	DB4021-2	Dual Cavity with Adjustable Loops							407.00	
49	DB4021-3	Triple Cavity with Adjustable Loops							650.00	
50	DB4026W-1	Single Cavity for Rack Mounting						227.00	227.00	
50	DB4026W-2	Dual Cavity for Rack Mounting						442.00	442.00	
50	DB4026W-3	Triple Cavity for Rack Mounting						653.00	653.00	
131	DB4028-1	Single Cavity for Rack Mounting								$286.00
131	DB4028-2	Dual Cavity for Rack Mounting								557.00
131	DB4028-3	Triple Cavity for Rack Mounting								823.00
42	DB4042L-1	Single Cavity for 30-36 MHz band	$ 832 00							
42	DB4042L-2	Dual Cavity for 30-36 MHz band	1,704.00							
42	DB4042M-1	Single Cavity for 36-42 MHz band } Replaces DB4041	832.00							
42	DB4042M-2	Dual Cavity for 36-42 MHz band	1,704.00							
42	DB4042H-1	Single Cavity for 42-50 MHz band	832.00							
42	DB4042H-2	Dual Cavity for 42-50 MHz band	1,704.00							
★ *	DB4045	Single, .5dB Fixed Loop Cavity, Paging								444.00
46	DB4170-1	Single Cavity for Rack Mounting				$282.00				
46	DB4170-2	Dual Cavity for Rack Mounting				587.00				
46	DB4170-3	Triple Cavity for Rack Mounting				859.00				
46	DB4171-1	Single Cavity for Rack Mounting							286.00	
46	DB4171-2	Dual Cavity for Rack Mounting							594.00	
*	DB4171-3	Triple Cavity, Vertical Mounting						880.00	870.00	
51	DB4176W	Shape Factored Filter® — 4 MHz (BW)						1,117 00	1,117 00	
47	DB4168	Shape Factored Filter® — 26 MHz (BW)				282 00				
47	DB8934	Shape Factored Filter® — 18 MHz (BW)			$300.00					
47	DB8936	Shape Factored Filter® — 175 MHz (BW)					$300 00			
51	DB4177W	Shape Factored Filter® — 2 MHz (BW)							1,565 00	
133	DB4190H	Shape Factored Filter® — 15 MHz (BW), High Power								802 00
133	DB4190HWT	Shape Factored Filter® — High Power with Tray								936 00
133	DB4192	Shape Factored Filter® — 15 MHz (BW), Interdigital								441 00
133	DB4192WT	Shape Factored Filter® — 15 MHz, Tray								576 00
134	DB4193-A or -B	Shape Factored Filter® — 10 MHz (BW)								441 00
134	DB4193WT-A or -B	Shape Factored Filter® — 10 MHZ, Tray								576 00
132	DB4200	High Power Tx Filter — 15/20 MHz (BW)								1,170 00
51	DB4195	Shape Factored Filter® — 4 MHz (BW) w/notch filter							524 00	
133	DB4196-WT	Shape Factored Filter 5 MHz (BW)								576 00
★ 134A	DB4257Z14-C	Shape Factored Filter® 835-849 MHz								400 00
★ 134A	DB4257Z14WT-C	Shape Factored Filter® 835-849MHz w/Tray								450 00

NOTCH AND BAND-PASS/BAND-REJECT FILTERS (SEE NOTE BELOW)

Page	Model Number	Description①	Frequency Separation (in KHz)②	Typical Rejection (in dB)	Frequency Range — MHz①				
					33-50	66-88	150-174	450-512	896-960
55	DB4022W-1	Single Band Pass — Notch Cavity for Rack Mounting	3 or 5 MHz	50/55				$227.00	
55	DB4022W-2	Dual Band Pass — Notch Cavity for Rack Mounting	3 or 5 MHz	80/88				441.00	
★ *	DB4029S-1	Single Band Pass — Reject Filter	24 > MHz	60					$262 00
★ *	DB4029S-2	Dual Band Pass — Reject Filter	24 > MHz	100					510.00
52,53	DB4104-1A	Single Notch Filter (Symmetrical)	200	25	$ 777.00				
52,53	DB4104-1B	Single Notch Filter (Low Pass) } Replaces DB4105	60	23	777.00				
52,53	DB4104-1C	Single Notch Filter (High Pass)	80	23	777.00				
52,53	DB4104-2A	Dual Notch Filter (Symmetrical)	200	54	1,665.00				
52,53	DB4104-2B	Dual Notch Filter (Low Pass) } Replaces DB4105	100	54	1,665.00				
52,53	DB4104-2C	Dual Notch Filter (High Pass)	160	54	1,665.00				
*	DB4120-1	Single Notch Filter	200-500	22-26		$317.00			
*	DB4120-2	Single Notch Filter	200-500	49-55		640.00			
52,53	DB4140-1A	Single Notch Filter (Symmetrical)	500	23			$222.00		
52,53	DB4140-1B	Single Notch Filter (Low Pass)	150	20			222.00		
52,53	DB4140-1C	Single Notch Filter (High Pass)	180	20			222 00		
52,53	DB4140-2A	Dual Notch Filter (Symmetrical)	500	52			425.00		
52,53	DB4140-2B	Dual Notch Filter (Low Pass)	200	43			425.00		
52,53	DB4140-2C	Dual Notch Filter (High Pass)	280	43			425.00		
52,53	DB4140-3A	Triple Notch Filter (Symmetrical)	500	78			615 00		
52,53	DB4140-3B	Triple Notch Filter (Low Pass)	300	68			615 00		
52,53	DB4140-3C	Triple Notch Filter (High Pass)	350	66			615 00		
*	DB4162-1	Single BP/BR 8″ Cavity	300	35			274.00		
*	DB4162-2	Dual BP/BR 8″ Cavity	300	70			582 00		
*	DB4162-3	Triple BP/BR 8″ Cavity	300	105			878.00		
54	DB4175-1A	Single Notch Filter (Symmetrical)	500	17				222 00	
54	DB4175-1B	Single Notch Filter (Low Pass)	180	13				222 00	
54	DB4175-2B	Dual Notch Filter (Low Pass)	500	27				425 00	
54	DB4175-2C	Dual Notch Filter	500	39				425 00	
54	DB4175-3B	Triple Notch Filter	1000	40				615 00	
54	DB4175-3C	Triple Notch Filter	800	60				615 00	
44,49,52	DB5015	Cabinet for DB4140 and/or DB4175 series					254 00	254 00	

NOTE: All Notch Filters are factory tuned before shipment. When ordering, specify exact pass and reject frequencies. ② Minimum frequency separation for no more than 1.0 dB insertion loss at pass frequency.

PASS-NOTCH FILTERS (200-226 MHz)

Page	Model Number	Description	Frequency Range — MHz							
							200-226			
•	DB4158	Four 2¾ in. × 15½ in. Cavity Filter (Rx)					$1,065.00			
•	DB4159	Three 2¾ in. × 15½ in. Cavity Filter (Tx)					1,065.00			

STATION DUPLEXERS, ISOPLEXERS AND CABINETS

Page	Model Number	Description①	Minimum Frequency Spacing (in MHz)	Power Rating (in watts)	Frequency Range — MHz②					
					33-50	66-88	150-174	406-420	450-512	806-960
56	DB4003	Station Duplexer, 3-Cavity, BP	5.0	400			$ 498.00			
57	DB4030	Station Duplexer, 4-Cavity, BR	1.5	150	$1,054.00					
57	DB4032	Station Duplexer, 6-Cavity, BR	0.5	150	1,635.00					
56	DB4044	Station Duplexer, 4-Cavity, BP	4.0	400			772.00			
56	DB4044WC	Station Duplexer, 4-Cavity, BP, Cabinet	4.0	400			1,094.00			
56	DB4046	Station Duplexer, 6-Cavity, BP	3.0	400			1,153.00			
•	DB4048	Use DB4060								
•	DB4050	Use DB4062								
58	DB4054	Rack Mount Duplexer, 4-Cavity, BR	5.0	150			565.00			
58	DB4055	Rack Mount Duplexer, 5-Cavity, BR	5.0	150			640.00			
58	DB4056	Rack Mount Duplexer, 6-Cavity, BR	2.0	150			805.00			
59	DB4057W	Rack Mount Duplexer, 3-Cavity, BP-BR	5.0	150			768.00			
59	DB4058W	Rack Mount Duplexer, 4-Cavity, BP-BR	3.0	150			1,029.00			
62	DB4060	Band Pass-Reject Duplexer, 4-Cavity	0.5	400			1,254.00			
62	DB4060-WC	Equipped with Cabinet	0.5	400			1,618.00			
62	DB4062	Band Pass-Reject Duplexer, 6-Cavity	0.3	400			1,882.00			
62	DB4062-WC	Equipped with Cabinet	0.3	400			2,278.00			
60	DB4067	Rack Mount Duplexer, 4-Cavity, BR	5.0	250				$532.00		
60	DB4068	Rack Mount Duplexer, 6-Cavity, BR	2.75	250				710.00		
60	DB4071	Rack Mount Duplexer, 4-Cavity, BR (450-470 MHz)	5.0	250					$544.00	
60	DB4072	Rack Mount Duplexer, 6-Cavity, BR	2.75	250					678.00	
63	DB4075W	Rack Mount Duplexer, 3-Cavity, BP-BR, Copper	5.0	250					606.00	
64	DB4075Z	Rack Mount Duplexer, 3-Cavity, BP-BR, Alum.	5.0	250					572.00	
63	DB4076W	Rack Mount Duplexer, 4-Cavity, BP-BR, Copper	3.0	250					780.00	
64	DB4076Z	Rack Mount Duplexer, 4-Cavity, BP-BR, Alum.	3.0	250					750.00	
135	DB4090	Rack Mount Duplexer, 2-Cavity, BP-BR	45.0	150						$ 526.00
135	DB4090S	Rack Mount Duplexer, 2-Cavity, BP-BR	<45.0	150						526.00
136	DB4090S-4	Rack Mount Duplexer, 4-Cavity, BP-BR	39.0	150						1,090.00
138	DB4096	Rack Mount Duplexer, 6-Cavity, BR (950-960 MHz)	3.6	150						666.00
136	DB4185H	Multiple frequency trunking interdigital duplexer	45.0	300						1,390.00
137	DB4186	Multiple frequency cellular duplexer	35.0	300						1,309.00
137	DB4187	Multiple frequency cellular duplexer	35.0	600						1,447.00
135	DB4402	Isoplexer BP-BR/w dual junction isolator	45.0	150						1,338.00
*	DB4402S-203	Isoplexer BP-BR/w dual junction isolator, 100w load	<45.0	150						1,338.00
44	DB5014	Outdoor weatherproof housing 30″ H × 24″ W × 8″ D			752.00		752.00	752.00		
44, 49, 52	DB5015	Metal Cab. 30″ or 38″ H × 19″ W × 7⅛″ D					254.00	254.00	254.00	
44,56	DB5017	Metal Cabinet 60″ or 43″ or 33″ H × 19″ W × 8″ D					310.00	310.00	310.00	
*	DB5028	Outdoor weatherproof housing for 30″ H × 24″ W x 16″ D					816.00	816.00	816.00	

DUPLEXER (200-226 MHz)

Page	Model Number	Description①	Minimum Frequency Spacing (in MHz)	Power Rating (in watts)	Frequency Range — MHz					
							200-226			
61	DB4100	Five Cavity Tx and Five Cavity Rx Duplexer, with Enclosure, 75dB Isolation	1.0	150+			$2,205.00			

①Refer to catalog sheets for complete description. When ordering, specify exact Tx and Rx frequencies. All duplexers are factory tuned. At a given frequency separation, the amount of isolation required between Tx and Rx varies with the different manufacturers models. Therefore, the minimum frequency spacing indicated above must be based on use of the duplexer with a "typical" radio model. **Factory will use — W suffix when latest design is phased into production.**

②**Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.**

*TECHNICAL DATA AVAILABLE.

NEW SUB-BAND OPTIMIZED CIRCULATORS, ISOLATORS, LOADS, HARMONIC FILTERS AND Z — MATCHERS

Page	Model	Description		Freq. (MHz)①	Isolation (dB)	Power (WATTS)	Price
78	DB4315-B	High Power Circulator, Single, Broad Band		148-174	25	350	$1,092.00
78	DB4325-B	High Power Circulator, Single, Broad Band		450-512	25	350	555.00
★ 150	DB4345C	High Power Circulator, Single, Broadband with heat sink (replaces DB4345HS)		850-960	25	350	468.00
★ 150	DB4345F	High Power Circulator, Single, Broadband without heat sink		850-960	25	150	388.00
76	DB4610-1A	Isolator, Single, Sub Band	Replaces DB4310, DB4311, DB43212, DB4313	118-128	30	150	375.00
76	DB4611-1A	Isolator, Single, Sub Band		126-138	30	150	358.00
76	DB4612-1A	Isolator, Single, Sub Band		132-148	30	150	358.00
76	DB4613-1A	Isolator, Single, Sub Band		148-160	30	150	358.00
76	DB4614-1A	Isolator, Single, Sub Band		160-174	30	150	358.00
76	DB4631-1A	Isolator, Single, Sub Band	Replaces DB4320, DB4321, DB4322, DB4323	406-450	30	150	358.00
76	DB4632-1A	Isolator, Single, Sub Band		450-512	30	150	358.00
148	DB4641-1A	Isolator, Single, Sub Band	Replaces DB4345, DB4348 (DB4644-1A for 895-928MHz① DB4645-1A For 928-960MHz①)	806-850	30	100	353.00
148	DB4642-1A	Isolator, Single, Sub Band		850-870	30	100	353.00
148	DB4643-1A	Isolator, Single, Sub Band		869-895	30	100	353.00
77	DB4610-2A	Isolator, Dual, Sub Band	Replaces DB4316	118-128	30	150	683.00
77	DB4611-2A	Isolator, Dual, Sub Band		126-138	30	150	683.00
77	DB4612-2A	Isolator, Dual, Sub Band		132-148	70	150	683.00
77	DB4613-2A	Isolator, Dual, Sub Band		148-160	70	150	683.00
77	DB4614-2A	Isolator, Dual, Sub Band		160-174	70	150	683.00
77	DB4631-2A	Isolator, Dual, Sub Band	Replaces DB4317	406-450	70	150	642.00
77	DB4632-2A	Isolator, Dual, Sub Band		450-512	70	150	642.00
149	DB4641-2A	Isolator, Dual, Sub Band	Replaces DB4346 (DB4644-2A for 895-928MHz① DB4645-2A For 928-960MHz①)	806-850	70	100	642.00
149	DB4642-2A	Isolator, Dual, Sub Band		850-870	70	100	642.00
149	DB4643-2A	Isolator, Dual, Sub Band		869-895	70	100	642.00
75	DB4331	Harmonic Filter		118-174		300	150.00
75	DB4332	Harmonic Filter		406-512		300	119.00
146	DB4333	Harmonic Filter		806-960		300	119.00
74,146	DB4601	Load-30 watt (DB4301, 25 watt isolator termination — $41.00				30	53.00
74,146	DB4602	Load-60 watt (Replaces DB4302)				60	83.00
74,146	DB4303B	Load-100 watt				100	171.00
74,146	DB4304B	Load-300 watt (Tray mounting may be required) ★(DB4305, 150 watt load $350.00)				300	419.00
74	DB4328	Z-matcher		30-50		300	161.00
75	DB4329	Z-matcher		118-174		300	126.00
75	DB4330	Z-matcher		406-512		300	126.00
146	DB4340	Z-matcher (specify connectors)		806-960		300	113.00

NOTES: For SPACE SAVER™ option, providing right angle load connector, use:
·2B suffix and a $16.00 list price adder ·Single isolators include a DB4601 30 watt termination. ·Dual isolators include a DB4601 30 watt and a DB4602 60 watt termination

HYBRID COMBINERS AND ACCESSORIES

Page	Model	Description	Freq. (MHz) ①	Isolation (dB)	Power (WATTS) ②	Price
74	DB4307	Hybrid Coupler-tunable	118-174	40	300	$ 494.00
74	DB4308	Hybrid Coupler-tunable	406-512	40	300	453.00
146	DB4309	Hybrid Coupler-tunable	806-960	40	300	439.00
★	DB4376	High Power Hybrid Coupler	850-940	20	500	514.00
147	DB4399	Five Channel Hybrid Coupler	935-940	25	300	③
70,71	DB4351-2	Two Tx Hybrid Combiner (tunable) Single Isolators	118-174	70	125	2,038.00
70,71	DB4352-2	Two Tx Hybrid Combiner (tunable) Dual Isolators	118-174	100	150	2,739.00
70,71	DB4353-2	Two Tx Hybrid Combiner (tunable) High Power, Single Isolators	118-174	70	350	4,717.00
70,71	DB4354-2	Two Tx Hybrid Combiner (tunable) High Power, Dual Isolators	118-174	100	350	7,077.00
70,71	DB4351-4	Four Transmitter Hybrid Combiner, Single Isolators	118-174	70	150	4,980.00
70,71	DB4352-4	Four Transmitter Hybrid Combiner, Dual Isolators	118-174	100	150	6,303.00
70,71	DB4353-4	Four Transmitter Hybrid Combiner, Single Isolators	118-174	70	300	10,505.00
70,71	DB4354-4	Four Transmitter Hybrid Combiner, Dual Isolators	118-174	100	300	14,500.00
72,73	DB4381-2	Two Tx Hybrid Combiner (tunable) Single Isolators	450-512	70	125	1,783.00
72,73	DB4382-2	Two Tx Hybrid Combiner (tunable) Dual Isolators	450-512	100	150	2,490.00
72,73	DB4383-2	Two Tx Hybrid Combiner (tunable) High Power, Single Isolators	450-512	70	350	2,320.00
72,73	DB4384-2	Two Tx Hybrid Combiner (tunable) High Power, Two Isolators	450-512	100	350	3,969.00
72,73	DB4381-4	Four Transmitter Hybrid Combiner, Single Isolators	406-512	70	150	4,358.00
72,73	DB4382-4	Four Transmitter Hybrid Combiner, Dual Isolators	406-512	100	150	5,730.00
72,73	DB4383-4	Four Transmitter Hybrid Combiner, Single Isolators	406-512	70	300	5,796.00
72,73	DB4384-4	Four Transmitter Hybrid Combiner, Dual Isolators	406-512	100	300	8,946.00
144,145	DB4391-2	Two Tx Combiner, Hybrid, Single Isolators	806-960	70	150	1,586.00
144,145	DB4392-2	Two Tx Combiner, Hybrid, Dual Isolators	806-960	100	150	2,128.00
144,145	DB4393-2	Two Tx Combiner, Hybrid, Single Isolators	806-1000	70	350	2,500.00
144,145	DB4394-2	Two Tx Combiner, Hybrid, Dual Isolators	806-1000	100	350	3,334.00
144,145	DB4391-4	Single Isolator, 4 Channel	806-1000	70	150	3,894.00
144,145	DB4392-4	Single Isolator, 4 Channel	806-1000	100	150	4,673.00
144,145	DB4393-4	Dual Isolator, 4 Channel	806-1000	60	350	4,914.00
144,145	DB4394-4	Dual Isolator, 4 Channel	806-1000	100	350	7,876.00
144,145	DB4392-5	Five Transmitter Hybrid Combiner, Dual Isolators	935-940	100	150	5,513.00
144,145	DB4394-5	Five Transmitter Hybrid Combiner, Dual Isolators	935-940	100	300	7,229.00
147	DB4355	Hybrid Coupling Panel	118-174	40	100	882.00
147	DB4356	Hybrid Coupling Panel	118-174	40	300	1,138.00
147	DB4385	Hybrid Coupling Panel	406-512	40	100	882.00
147	DB4386	Hybrid Coupling Panel	406-512	40	300	1,138.00
147	DB4395	Hybrid Coupling Panel (DB4396 Coupling Panel, 350W $940.00)	806-960	40	150	654.00

①Frequencies shown are for pricing and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.

②Higher Powered Combiners can be furnished. Contact plant for details.

③Consult Decibel Systems Engineering for requirements and pricing.

TECHNICAL DATA AVAILABLE.

★ — NEW PRODUCT

PROTECTION PANELS (Intermodulation), LOW PROFILE

MINIMUM ORDER $100.00

Description — Configuration 150 Watts or Less 118-512MHz / 100 Watts or Less 806-960MHz	DB47 (XX) — (XX) = 10, 11, 12 13 or 14 Series 118-174 MHz①	DB47 (XX) — (XX) = 31 or 32 Series 406-512 MHz①	DB47 (XX) — (XX) = 41, 42, 43 44 or 45 Series 806-960 MHz①	Last 3 Digits of Model #
	Page 79	Page 79	Page 151	
Single Isol., 30w Load	$ 483.00	$ 483.00	$ 483 00	101
Single Isol., Harmonic Filter, 30w Load	600.00	600.00	600.00	111
Single Isol., 60w Load	506.00	506.00	506.00	102
Single Isol., Harmonic Filter, 60w Load	624.00	624.00	624.00	112
Single Isol., 100w Load	708.00	702.00	702.00	103
Single Isol., Harmonic Filter, 100w Load	813.00	807.00	807.00	113
Dual Isol., 30 Watt Load	764.00	726.00	726 00	201
Dual Isol., Harmonic Filter, 30w Load	872.00	833.00	833.00	211
Dual Isol., 100w Load	792.00	753.00	753.00	202
Dual Isol., Harmonic Filter, 60w Load	900.00	861.00	861.00	212
Dual Isol., 100w Load	984.00	947.00	947 00	203
Dual Isol., Harmonic Filter, 100w Load	1,089.00	1,052.00	1,052.00	213

150 WATT P.P. MODEL NUMBER NOMENCLATURE:

EXAMPLE: DB4710-201, IM Protection Panel in 118-128 MHz Sub-Band with dual isolators having a 30 watt termination. No harmonic filter.

MODEL DB47 ( ) — FREQUENCY SUB-BAND (150 WATT)

(10) 118-128 MHz
(11) 128-128 MHz
(12) 132-148 MHz
(13) 148-160 MHz
(14) 160-174 MHz
(31) 406-450 MHz
(32) 450-512 MHz
(41) 806-850 MHz
(42) 850-870 MHz
(43) 869-895 MHz
(44) 895-928 MHz
(45) 928-960 MHz

( ) ISOLATOR

(1) SINGLE
(2) DUAL

( ) HARMONIC FILTER

(0) WITHOUT
(1) WITH

( ) FINAL TERMINATION

(1) 30 WATT
(2) 60 WATT
(3) 100 WATT

HIGH POWER PROTECTION PANEL (Intermodulation), PANEL AND TRAYS — 350 WATT

Description — Configuration 350 Watts or Less	DB4713H- Series① 148-174 MHz	DB4713HT- Series① 148-174 MHz	DB47 (XX) H- (XX) = 31 or 32 Series① 406-512 MHz	DB47 (XX) HT- (XX) = 31 or 32 Series① 406-512 MHz	Last 3 Digits of Model #
	Page 79	Page 79	Page 79	Page 79	
Single Isol., 100w Load	$1,614.00	$1,726.00	$1,143.00	$1,259.00	103
Single Isol., Harmonic Filter, 100w Load	1,738.00	1,854.00	1,232.00	1,382.00	113
Single Isol., 300w Load	1,865.00	1,979.00	1,451 00	1,598.00	104
Single Isol., Harmonic Filter, 300w Load	1,989.00	2,112.00	1,502.00	1,629 00	114
Dual Isol., 100w Load	2,792.00	2,906.00	1,695.00	1,806.00	203
Dual Isol., Harmonic Filter, 100w Load	2,916.00	3,039.00	1,742 00	1,888 00	213
Dual Isol., 300w Load	3,043.00	3,158.00	1,832.00	1,899 00	204
Dual Isol., Harmonic Filter, 300w Load	3,167.00	3,284.00	1,877.00	1,954.00	214

350 WATT P.P. MODEL NUMBER NOMENCLATURE

EXAMPLE: DB4732HT-214, Protection Panel in 450-512 MHz band, dual isolators with 300 watt load and harmonic filter installed on panel/tray configuration.

MODEL DB47 ( ) — FREQUENCY SUB-BAND (350 WATTS)

(13) 148-174 MHz
(31) 406-450 MHz
(32) 450-512 MHz

( ) PANEL OR TRAY

(H) High Power Panel
(HT) High Power Tray

( ) ISOLATOR

(1) SINGLE
(2) DUAL

( ) HARMONIC FILTER

(0) WITHOUT
(1) WITH

( ) FINAL TERMINATION

(3) 100 WATT
(4) 300 WATT

CAVITY-FERRITE COMBINERS AND ACCESSORIES 132-512 MHz

Page	Model	Description	Freq. (MHz) ①	Isolation (dB)	Power (Watts)	Price
65	DB4350-4	Four Tx Low Loss Combiner, Dual Isolators, Open Cabinet	118-174	80	150	$ 7,335.00
65	DB4350-8	Eight Tx Low Loss Combiner, Dual Isolators, Open Cabinet	118-174	65	150	14,668.00
66	DB4360-4	Four Tx Low Loss Combiner (Rack Mount) 8″ Cavities	138 174	20	150	5 320.00
68	DB4365-4	Four Tx Low Loss Combiner, 5″ × 7″ Quarterwave Cavities	406-512	75	150	4,458.00
68	DB4365-5	Five Tx Low Loss Combiner, 5″ × 7″ Cavities (SP7365-5)	406-512	75	150	5,573.00
68	DB4365-8	Eight Ch Tx Low Loss Combiner, 5″ × 7″ Quarterwave Cavities	450 512	75	150	8,659 00
68	DB4365-10	Ten Tx Low Loss Combiner, 5″ × 7″ Cavities (SP7365-10)	406-512	75	150	11,146.00
68	DB4365-20	Twenty Tx Low Loss Combiner, 5″ × 7″ Cavities (SP7365-20)	406-512	75	150	22,292.00
69	DB4379-4	Four Tx Low Loss Combiner, Dual Isolators, Open Cabinet	406-512	70	150	6,925.00
69	DB4379-8	Eight Tx Low Loss Combiner, Dual Isolators, Open Cabinet	406-512	70	150	13,850.00

① **Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.**

② Higher Powered Combiners can be furnished. Contact plant for details.

③ DB 4379 Combiners are available in two, three, five and six channel models. Five and six channel models require one open cabinet only.

200 MHz LOW LOSS CAVITY-FERRITE COMBINERS/ 118-400 MHz CAVITY COMBINERS

Page	Model	Description	Price
67	DB4369-4	Four Channel, Low-Loss Tx Combiner (Rack Mount) 8″ Cavities, Dual Isolators	$ 6,486.00
67	DB4369-8	Eight Channel, Low-Loss Tx Combiner (Rack Mount) 8″ Cavities, Dual Isolators	12,971.00
★	SP8704	Four Channel Low Loss All Cavity Combiner 118-136 MHz With Cabinet	4,264.00
★	SP8688-4WOC	Four Channel Low Loss All Cavity Combiner 225-400 MHz (Without Cabinet)	1,080.00
★	SP8688-4WC	Four Channel Low Loss All Cavity Combiner 225-400 MHz (With Cabinet)	1,575.00

TOWER TOP RECEIVER AMPLIFIERS, WITH IMPROVED LIGHTNING PROTECTION, AND CROSSBAND COUPLERS

Page	Model	Description		Freq. Range (MHz)	Price
139	DB8980P '	Amplifier, Complete	20 dB GAIN AT 800 MHz	806-850	$4,195.00
139	DB8981P	Amplifier, Complete	20 dB GAIN AT 806-821 and 806-901 MHz	806-901	4,760.00
84	DB8982P	Amplifier, Complete	20 dB GAIN AT 456-460 and 466-470 MHz	456-470	6,654.00
84	DB8983P	Amplifier, Complete	20 dB GAIN AT 456-460, 466-470 and 806-821 MHz	456-800	7,144.00
139	DB8984P	Amplifier, Complete	20 dB GAIN AT 800 MHz, NO GAIN AT 450 MHz	450-512, 806-850	5,562.00
*	DB8985P	Amplifier, Complete	20 dB GAIN IN 4 MHz, BAND WIDTH (SP8148)	406-420	5,148.000

Page	Model	Description	Freq. (MHz)	Isolation (dB)	Power (WATTS) ②	Price
43	DB4339WB-A	Cross band coupler with mounting bracket for bottom rack mounting	406-512/806-901	40	600	$574.00
43	DB4339WC-A	Cross band coupler in weather resistant cabinet for tower top mounting	406-512/806-901	40	600	860.00
★ 43	DB4339WB-B	Cross band coupler with mounting bracket for bottom rack mounting	406-512/850-960	40	600	574.00
★ 43	DB4339-WC-B	Cross band coupler in weather resistant cabinet for tower top mounting	406-512/850-960	40	600	860.00

30-512 MHz RECEIVER MULTICOUPLER

Page	Description				Model Number①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8( )04 4 Chan.	DB 8( )08 8 Chan.	DB 8( )12 12 Chan.	DB 8( )16 16 Chan.	DB 8( )24 24 Chan.	DB 8( )32 32 Chan.	Last 3 Digits of Model #
80,81,82	Non-Expandable	115VAC	No	4 & 8	$1,060.00	$1,224.00	**	**	**	**	-100
80,81,82	Non-Expandable	12-15VDC	No	4 & 8	1,028.00	1,144.00	**	**	**	**	-200
80,81,82	Non-Expandable	220VAC	No	4 & 8	1,093.00	1,260.00	**	**	**	**	-300
80,81,82	Non-Expandable	115VAC	Yes	4 & 8	1,257.00	1,423.00	**	**	**	**	-110
80,81,82	Non-Expandable	12-15VDC	Yes	4 & 8	1,235.00	1,406.00	**	**	**	**	-210
80,81,82	Non-Expandable	220VAC	Yes	4 & 8	1,290.00	1,453.00	**	**	**	**	-310
80,81,82	Expandable in 4 Channel Steps	115VAC	No	4,8,12 & 16	1,232.00	1,465.00	$1,668.00	1,922.00	**	**	-101
80,81,82	Expandable in 4 Channel Steps	12-15VC	No	4,8,12 & 16	1,154.00	1,387.00	1,591.00	1,822.00	**	**	-201
80,81,82	Expandable in 4 Channel Steps	220VAC	No	4,8,12 & 16	1,264.00	1,496.00	1,698.00	1,928.00	**	**	-301
80,81,82	Expandable in 4 Channel Steps	115VAC	Yes	4,8,12 & 16	1,420.00	1,652.00	1,851.00	2,081.00	**	**	-111
80,81,82	Expandable in 4 Channel Steps	12-15VDC	Yes	4,8,12 & 16	1,341.00	1,650.00	1,776.00	2,004.00	**	**	-211
80,81,82	Expandable in 4 Channel Steps	220VAC	Yes	4,8,12 & 16	1,451.00	1,684.00	1,882.00	2,112.00	**	**	-311
80,81,82	Expandable in 8 Channel Steps	115VAC	No	8,16,24 & 32	**	2,010,00	**	2,282.00	$2,536.00	$2,987.00	-102
80,81,82	Expandable in 8 Channel Steps	12-15VDC	No	8,16,24 & 32	**	1,933,00	**	2,203.00	2,460.00	2,911.00	-202
80,81,82	Expandable in 8 Channel Steps	220VAC	No	8,16,24 & 32	**	2,042,00	**	2,313.00	2,567.00	3,018.00	-302
80,81,82	Expandable in 8 Channel Steps	115VAC	Yes	8,16,24 & 32	**	2,198,00	**	2,463.00	2,717.00	3,168.00	-112
80,81,82	Expandable in 8 Channel Steps	12-15VDC	Yes	8,16,24 & 32	**	2,237,00	**	2,385.00	2,641.00	3,092.00	-212
80,81,82	Expandable in 8 Channel Steps	220VAC	Yes	8,16,24 & 32	**	2,343,00	**	2,502.00	2,748.00	3,195.00	-312
80,81,82	High Performance Expandable	115VAC		4,8,12,16	1,696.00	1,929.00	2,123.00	2,378.00	**	**	-103
80,81,82	in 4 Channel Steps	12-15VDC	No	4,8,12,16	1,617.00	1,852.00	2,010.00	2,277.00	**	**	-203
★ 80,81,82	Low Noise GaAsFET, Expandable in 4 Channel Steps	115VAC	No	4,8,12,16	1,696.00	1,929.00	2,123.00	2,378.00	**	**	-104

( )=1-30 to 86 MHz, 2-148 to 174 MHz, 3-406 to 512 MHz, 4-118 to 136 MHz, 6-225 to 400 MHz.

Note: Factory will use -W Suffix on RX Multicouplers and Accessories when latest amplifier, chassis and power dividers are phased into production!

200 MHz RECEIVER MULTICOUPLER

Page	Description				Model Number①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8(7)04 4 Chan.	DB 8(7)08 8 Chan.	DB 8(7)12 12 Chan.	DB 8(7)16 16 Chan.	DB 8(7)24 24 Chan.	DB 8(7)32 32 Chan.	Last 3 Digits of Model #
82	Expandable in 4 Channel Steps	115VAC	No	4-32	$1,563.00	$1,760.00	$1,992.00	$2,223.00	**	**	101

*Consult Customer Service — Technical Data Available
**Not available as standard.
① Specify frequency when ordering
② 1000 watts with optional LC Type connectors.
(7)=200 to 220 MHz

Note: Shape Factored Filter® preselectors are available. Contact Customer Service for further details.

800 MHz CONVENTIONAL, TRUNK AND CELLULAR COMBINING SYSTEMS AND ACCESSORIES, including 900 MHz PAGING

Page	Model	Description	Freq. (MHz)	Isolation Tx Tx (dB)	Insertion Loss (dB)	Power (Watts)	Price
140	DB4458	5 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	2.0①	100	$ 5,340.00
140	DB4458-2	10 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70②	3.0②	100	10,710.00
140	DB4482	2 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	1.7①	100	2,523.00
140	DB4483	3 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	1.7①	100	2,918.00
140	DB4483-2	6 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	2.2①	100	5,835.00
142	DB8061-2	2 CH Tx ¾ Wave 5 × 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.1⑤	100	1,720.00
142	DB8061-3	3 CH Tx ¾ Wave 5 × 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.2⑤	100	2,579.00
142	DB8061-5	5 CH Tx ¾ Wave 5 × 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.4⑤	100	4,261.00
142	DB8061-10	10 CH Tx ¾ Wave 5 × 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.9⑤	100	8,231.00
142	DB8061-20	20 CH Tx ¾ Wave 5 × 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	4.4⑤	100	16,462.00
142	DB8061-WB	Single Expansion CH, w/Bracket, Single Isolator④	850-890			100	910.00
142	DB8061-WOB	Single Expansion CH, w/o Bracket, Single Isolator④	850-890			100	896.00
142	DB8061HWB-E	Single Expansion CH, w/Bracket, Single Isolator	928-933		1.0	350	1,194.00
141	DB8060-2	2 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.3⑤	100	2,212.00
141	DB8060-3	3 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.4⑤	100	3,319.00
141	DB8060-4	4 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.5⑤	100	4,425.00
141	DB8060-5	5 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.7⑤	100	5,762.00
141	DB8060-10	10 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.2⑤	100	11,257.00
141	DB8060-20	20 CH Tx ¾ Wave 5 × 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.6⑤	100	22,515.00
141	DB8060-PNL	Tenth to Eleventh CH Junction Panel	850-890			100	402.00
141	DB8060-WB	Single Expansion CH w/Bracket, w/Dual Isolator④	850-890			100	1,158.00
141	DB8060-WOB	Single Expansion CH w/o Bracket, w/Dual Isolator④	850-890			100	1,146.00
★ *	DB8062-2	2 CH Tx, ¾ Wave 5 × 7 cavity, Dual Isol., Combiner	850-940	80①	1.7①	150	2,888.00
★ *	DB8062-3	3 CH Tx, ¾ Wave 5 × 7 cavity, Dual Isol., Combiner	850-940	80①	1.8①	150	4,120.00
★ *	DB8062-5	5 CH Tx, ¾ Wave 5 × 7 cavity, Dual Isol., Combiner	850-940	80①	2.0①	150	6,595.00
★ *	DB8062-10	10 CH Tx, ¾ Wave 5 × 7 cavity, Dual Isol., Combiner (LC output connector)	850-940	65②	2.7②	150	13,845.00
143	DB8081-4	4 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	1.9⑥	50	3,576.00
143	DB8081-8	8 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.3⑥	50	6,846.00
143	DB8081-16	16 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.8⑥	50	13,697.00
143	DB8081-5	5 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.0⑥	50	4,261.00
143	DB8081-9	9 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.2⑥	50	7,704.00
143	DB8081-10	10 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.4⑥	50	8,231.00
143	DB8080-4	4 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	870-896	70⑥	2.2⑥	50	5,057.00
143	DB8080-8	8 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	870-896	70⑥	2.6⑥	50	9,824.00
143	DB8080-16	16 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	870-896	70⑥	3.2⑥	50	19,649.00
143	DB8080-5	5 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	851-896	70⑥	2.4⑥	50	6,286.00
143	DB8080-9	9 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	870-896	70⑥	2.7⑥	50	11,052.00
143	DB8080-10	10 CH Tx Combiner, Dielectrically Loaded, Dual Insolator③	851-896	70⑥	2.9⑥	50	12,281.00
136	DB4185H	T-R & Single Antenna, BP Duplexer	806-890	60/85①	1.2/0.9	300	1,390.00
133	DB4192	Shape Factored Filtered® – 15MHz (BW) Interdigital	806-960				420.00
133	DB4192WT	DB4192 Filter, with tray	806-960				576.00
	DB60RACK	5 Ft. Rack, with equipment installed					854.00
	DB70RACK	6 Ft. Rack, with equipment installed					900.00

①1 MHz Tx-Tx Spacing.

②500 KHz Tx-Tx spacing.

③Additional technical data available upon request. DB8080 Series combiners available for cellular only initially. Consult Customer Service. See note below.

④Configuration permits single channel expansion. DB8060 Series combiners use Serpentine™ cabling for 250 KHz and greter Tx-Tx spacings.

⑤At 250 KHz Tx-Tx spacing

⑥AT 630 KHz Tx-Tx spacing

NOTE: Consult Systems Engineering for specifications and for price of DB8080 series combiners, without isolators.

★ — NEW PRODUCT

MINIMUM NET ORDER $100.00

800 MHz RECEIVER MULTICOUPLER

Page	Description				Model Number①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8(5)04 4 Chan.	DB 8(5)08 8 Chan.	DB 8(5)12 12 Chan.	DB 8(5)16 16 Chan.	DB 8(5)24 24 Chan.	DB 8(5)32 32 Chan.	Last 3 Digits of Model #
152,153	Expandable in 4 Channel Steps	115VAC	No	4,8,12 & 16	$1,764.00	$2,011.00	$2,259.00	$2.508.00	**	**	101
	Expandable in 4 Channel Steps	12-15VDC	No	4,8,12 & 16	1,701.00	1,949.00	2,203.00	2,445.00	**	**	-201
	Expandable in 4 Channel Steps	220VAC	No	4,8,12 & 16	1,788.00	2,036.00	2,285.00	2,532.00	**	**	-301
	Low Noise Expandable in 4 Channel	115VAC	No	4,8,12 & 16	1,764.00	2,011.00	2,259.00	2,508.00	**	**	104
152, 153	Expandable in 8 Channel Steps	115VAC	No	8,16,24, & 32	**	1,942.00	**	2,289.00	$2,636.00	$2,983.00	-102
	Expandable in 8 Channel Steps	12-15VDC	No	8,16,24, & 32	**	1,803.00	**	2,080.00	2,568.00	2,775.00	-202
	Expandable in 8 Channel Steps	220VAC	No	8,16,24, & 32	**	1,903.00	**	2,180.00	2,594.00	2,983.00	-302

ACCESSORIES — RECEIVER MULTICOUPLER

Page	Model Number①	Description	Price
81,83	DB8900	Receiver Multicoupler Chassis and Frame only	$580.00
81,83	DB8918	4-Way Power Splitter (30-512 MHz), BNC input/output	220.00
81,83	DB8919	8-Way Power Splitter (30-512 MHz), BNC input/output	291.00
81	DB8920	4-Way Power Splitter (800-960 MHz), BNC input/output	291.00
153	DB8921	8-Way Power Splitter (800-960 MHz), BNC input/output	367.00
81	DB8922	50 ohm Dummy Load, BNC (Power Splitter)	7.50
81,153	DB8923-BN	8 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	306.00
81,153	DB8923-12N	12 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	410.00
81,153	DB8923-24N	24 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	850.00
*	DB8924-8N	8 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	375.00
*	DB8924-12N	12 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	504.00
*	DB8924-24N	24 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	888.00
*	DB8926	Load ¼ W. 50Ω N-type	18.00
*	DB8929	Helical Preselector A=30-50 MHz, B=66-88 MHz	244.00
81	DB8931	Helical Preselector 148-174 MHz	244.00

ACCESSORIES — RECEIVER MULTICOUPLER (continued)

Page	Model Number①	Description	Price
81	DB8932	Helical Preselector 406-512 MHz	$ 244.00
*	DB8941B	Amplifier 18.5 dB Gain 30-50 MHz	519.00
81	DB8942	Amplifier 16 dB Gain 406-512 MHz	519.00
★ *	DB8942G-450	Amplifier 17 dB Gain, 450-470 MHz, GaAsFET	1,008.00
*	DB8943A	Amplifier 10 dB Gain 132-172 MHz	519.00
*	DB8943B	Amplifier 23 dB Gain 132-172 MHz	519.00
★ *	DB8943G-150	Amplifier 22 dB Gain, 150-170 MHz, GaAsFET	1,008.00
81,83	DB8944	Amplifier 18.5 dB Gain, 30-200 MHz	519.00
81,153	DB8945	Amplifier 23 dB 400-870 MHz	1,008.00
★ *	DB8945G-800	Amplifier 17 dB Gain, 806-901 MHz, GaAsFET	1,008.00
★ *	DB8945G-900	Amplifier 18 dB Gain, 900-960 MHz, GaAsFET	1,008.00
81,153	DB8946	Amplifier 17 dB Gain, 200-400 MHz	519.00
81	DB8950	Power Supply 115 VAC/10 VDC	366.00
81	DB8951	Power Supply 220 VAC/10 VDC	394.00
81,153	DB8952	Power Supply 115 VAC/15 VDC	365.00
81,153	DB8953	Power Supply 220 VAC/15 VDC	394.00
81	DB8954	Voltage Regulator 12-15 FDC/10 VDC	290.00
81,153	DB8955	Power Supply 15 VDC to 15 VDC Crossover Module	255.00
81	DB8956	Power Supply 115 VAC/24 VDC	365.00
153	DB8957	Power Supply 230 VAC/24 VDC	394.00
*	DB8940	Cable Expansion Kit	23.00
*	DB8940W	Cable Expansion Kit, "W" Series	23.00

NEW BASE STATION POWER AMPLIFIERS, POWER SUPPLIES

Page	Model Number①	Description	Price
160	DBP012C01B-G	Low Power, Cellular, 860-900 MHz	$ 900.00
160	DBP012C01B-H	Low Power, Cellular, 915-960 MHz	900.00
162	DBP045C01B-G	High Power, Cellular, 860-900 MHz	1,050.00
162	DBP045C01B-H	High Power, Cellular, 915-960 MHz	1,050.00
159	DBP012D01B-G	Low Power, Dynamic, Cellular, 860-900 MHz	1,200.00
159	DBP012D01B-H	Low Power, Dynamic, Cellular, 915-960 MHz	1,200.00
161	DBP045D01B-G	High Power, Dynamic, Cellular, 860-900 MHz	1,600.00
161	DBP045D01B-H	High Power, Dynamic, Cellular, 915-960 MHz	1,600.00
163	DBP100CA1B-G	High Power, 100 Watt 850-900 MHz, 28V	1,965.00
163	DBP100CA1B-H	High Power, 100 Watt 915-960 MHz, 28V	1,965.00
163A	DBP125CA1B-G	High Power, 125 Watt Amplifiers, 850-900 MHz, 28V	2,240.00
163A	DBP125CA1B-H	High Power, 915-960 MHz, 28V	2,240.00
163B	DBP150CA1A-G	High Power, 150 Watt Amplifiers, 850-900 MHz, 13.6V	2,795.00
163B	DBP150CA1A-H	High Power, 915-960 MHz, 13.6V	2,795.00
163C	DBP200CA1B-G	High Power, 200 Watt Amplifiers, 850-900 MHz, 28V	2,995.00
163C	DBP200CA1B-H	High Power, 915-960 MHz, 28V	2,995.00

NEW CELLULAR TELEPHONE TESTER

Page	Model Number	Description	Price
★ 157A	DB1965	Cel-Tel™ Portable Tester. Automated tester for use in installation and testing of 824-896 MHz cellular telephones	$3,995.00

NEW FIBER OPTIC TRANSMITTER AND RECEIVER

Page	Model Number	Description	Price
157B	DBF1B-TX10	Fiber Optic Transmitter to modulate signals in 1300 nm wavelengths between .01 and 3 GHz	$7,900.00
157B	DBF1B-RX10	Fiber Optic Receiver of intensity modulated signals in 1300 nm wavelengths between .01 and 3 GHz	4,150.00

①Specify frequency when ordering.
*Technical Data Available
**Not available as standard.

STATIC-TO-DYNAMIC MODIFICATIONS

Page	Model Number①	Description	Price
158	DBPSPAU-G	Avantek Amplifier Modification	$770.00
158	DBPSPHA-G	Harris Amplifier Modification	770.00
158	DBPSPKO-G	Kokusai Amplifier Modification	770.00
158	DBPMODS-G	Modification Service Contract	81.00

POWER SUPPLIES FOR DBP100 AND DBP125 SERIES

Page	Model Number①	Description	Price
*	DBPSC-28V18	Power Supply, 110 VAC, 28V @ 18A	$895.00
*	DBPSD-28V18	Power Supply, 220 VAC, 28V @ 18A	895.00

POWER SUPPLIES FOR DBP150 SERIES

Page	Model Number①	Description	Price
*	DBPSC-13V38	Power Supply, 110 VAC, 13.6V @ 38A	$895.00
*	DBPSD-13V38	Power Supply, 220 VAC, 13.6V @ 38A	$895.00

POWER SUPPLIES FOR DBP200 SERIES

Page	Model Number①	Description	Price
*	DBPSC-28V36	Power Supply, 110 VAC, 28V @ 36A	$1,467.00
*	DBPSD-28V36	Power Supply, 220 VAC, 28V @ 36A	$1,467.00

SENTRY 8000™ REMOTE ANTENNA SYSTEM MONITORS

Page	Model Number	Description	Price
156	DB8843	Complete Monitoring Unit includes: 1) Internal Modem 300, 1200 baud 2) 18 Transmitter Ports 3) 4 Antenna Ports 4) 6 Local Alarm Ports 5) Battery Back-up Port 6) 4 Control Relays	$5,580.00
155	DB8860	Processor, includes: Eight Digital Inputs, Four Form C Relay Outputs, Manual, Wall Transformer and Audio Pass Thru	1,750.00
★ *	DB8860H	Same as DB8860, except includes DB HOST™ PC Software	2,095.00

	DB8660 OPTIONS:			
		FOR	ADD	
155 155	DB8869-AD14 DB8869-AD58	**Inputs**-Required for basic operation Analog—maximum of 64 Digital—maximum of 48 Relays—maximum of 40 Audio—maximum of 16	Four Port A/D Card 1 Four Port A/D Card 2 Each Port contains: Four Analog input Two Digital inputs One Form C Relay output One Relay Driver One pair Balanced Audio Pass inputs	$495.00 495.00
155	DB8869 VDT	**ONSITE** two way communication with a Terminal	RS232 Interface Card	220.00
155	DB8866	**Local** LCD Diplay for Monitoring and selected data entry (time, date & password)	Portable Keyboard/Display Unit	435.00
155	DB8866 MODEM	**Remote** two way communication with a Terminal (Wireline Only)	Modem Card Baud Rate (300/1200)	1,084.00
★	DB8869 VMEM	**Remote** Voice Reporting	Voice Memory Card	300.00
155	DB8869 PACK	**Remote** two-way communication with a Terminal (Radio Link)	Packet Controller Interface Card	220.00
155	DB8862	**Expansion** The I/O capability of the eight port Sentry can be increased to a total of 16 ports by attaching one Slave Unit.	Slave Expansion Unit interfaces to DB8860 and accommodates one or both Four Port A/D Cards	1,183.00
155	DB8869-M422	**Master** to slave interface card	Interface for expansion of master with slave units	220.00
155	DB8864	**Automatic DC Power** Battery backup and charging	Battery Backup Module	215.00
155	DB8890-WCX	**Interconnection** (Connectors, Cables)	25 pin Connector Kit for easy assembly to Sentry 8860 (excludes cables)	27.50
155	DB8869-M422		Processor to Slave interface card	220.00
155	DB8869-SL25		Shielded 25 pin cable (25 feet)	165.00
155	DB8869-SL3		Shielded 25 pin cable (3 feet) For RS422 communication with main Sentry processor	99.00
155	DB8869-TEMP		Temperature Probe	275.00

NEW HAND-HELD DIGITAL POWER METER②

Page	Model Number	Description	Price
157	DB8120	25-1000 MHz Power Meter, With Cables (Belt Clip)	$385.00
157	DB8120M	25-1000 MHz Power Meter, With Cables (Magnet)	385.00

①Please specify frequencies of operation when ordering. Current product availability, frequency of operation and price are determined by the published price list.

②**WITH METER OR MONITOR INSTALL SENTRY 8000™ SENSORS ONLY. USE CORRECT MODEL NO. FOR OPERATING FREQUENCIES.**

SENTRY 8000™ TxLAM™ SINGLE Tx LOCAL ALARM MONITOR②

Page	Model Number	Description	Frequency MHz	Price
★ 156B	DB8820	TxLAM, Local Alarm	30-1000	$950.00
★ 156B	DB8820-RACK	Panel for three TxLAM units	—	95.00

SENTRY 8000™ RF POWER SENSORS

Page	Model Number	Description	Frequency MHz	Price
		(Rated to 1000 watts)		
157	DB8881A1000	Unidirectional Sensor, N-Female③	450-1000	$139.00
157	DB8883A1000	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A1000	Bidirectional Sensor	450-1000	164.00
157	DB8885A1000	Bidirectional Sensor	100-325	164.00
157	DB8888A1000	Bidirectional Sensor	30-88	164.00
		(Rated to 350 watts)		
157	DB8881A350	Unidirectional Sensor, N-Female③	450-1000	139.00
157	DB8883A350	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A350	Bidirectional Sensor	450-1000	164.00
157	DB8885A350	Bidirectional Sensor	100-325	164.00
157	DB8888A350	Bidirectional Sensor	30-88	164.00
		(Rated to 150 watts)		
157	DB8881A100	Unidirectional Sensor, N-Female③	450-1000	139.00
157	DB8883A100	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A100	Bidirectional Sensor	450-1000	164.00

SENTRY 8000™ CABLE ASSEMBLIES, CONNECTOR KITS, JUMPER

*	DB8890-SC-XX	Single Cable Assy Complete with 2 "D" connector pins on one end, 1 phono plug on the opposite end. "XX" denotes the length in feet in 5 ft increments from 5 to 50 feet.⑤	$19.25 plus .55 per foot cable
*	DB8890-DC-XX	Dual Cable Assy consists of 2 DB8890-SC-XX assemblies with the ground conductor tied together on the "D" connector end. Required for the Antenna 4 position only.	25.00 plus 1.10 per foot cable
*	DB8890-JUMP	Jumper wire used to ground reflected inputs to Sentry when only forward power is being monitored.	5.50
*	DB8890-WCA	Antenna connector kit. Contains all parts and instructions to connect DB8890-SC-XX or DB8890-DC-XX assy(s) to the Sentry antenna inputs.	20.00
*	DB8890-WCT	Transmitter connector kit. Contains all parts and instructions to connect DB8890-SC-XX assemblies to the Sentry transmitter inputs.	29.00

③ Power to be measured input to female connector of sensor.
④ Power to be measured input to male connector of sensor.
⑤ One required for each parameter being measured. For example, unidirectional sensors require one each, bidirectional sensors require two each.
*Technical Data Available

★ AVAILABLE THIRD QUARTER '89 —
STANDARD SENTRY 8000™ "PACKAGES"

DB8830H — SENTRY, WITH INSTALLATION KITS, FOR 1 OR 2 SINGLE TRANSMITTER OR 5 CHANNEL COMBINED SYSTEMS, INCLUDING DB HOST™ SOFTWARE. (Page 156A.)

DB8830HV — SENTRY, WITH INSTALLATION KITS, FOR 1 OR 2 SINGLE TRANSMITTER OR 5 CHANNEL COMBINED SYSTEMS, INCLUDING DB HOST™ SOFTWARE AND VOICE REPORTING. (Page 156A.)

DB8860H — SENTRY, WITH INSTALLATION KITS, FOR MULTIPLE TRANSMITTER SITES (DUAL, 5 CHANNEL, 10 CHANNEL OR 20 CHANNEL COMBINED), INCLUDING DB HOST™ SOFTWARE. (Page 155.)

DB8860HV — SENTRY, WITH INSTALLATION KITS, FOR MULTIPLE TRANSMITTER SITES (DUAL, 5 CHANNEL, 10 CHANNEL, 20 CHANNEL COMBINED), INCLUDING DB HOST™ SOFTWARE AND VOICE REPORTING. (Page 155.)

DB8860HVS — SENTRY, WITH INSTALLATION KITS, FOR HIGH DENSITY TRANSMITTER SITES (UP TO 32), INCLUDING DB HOST™ SOFTWARE AND VOICE REPORTING. (Page 155.)

DECIBEL

MOBILE ANTENNAS

MINIMUM NET ORDER $100.00

30-50 MHz RANGE

Page No.	Model No.	Price
30-36 MHz Base Load Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
87	DB712-A01	$63.65
87	DB712-A10	68.50
87	DB712-A06	79.75
87	DB712-A16	85.50
87	DB712-A07	89.75
87	DB712-A17	93.25
87	DB712-A00①	56.70
87	DB712-A11①	60.00
36-42 MHz Base Load Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
87	DB712-B01	$63.65
87	DB712-B11	68.50
87	DB712-B06	79.75
87	DB712-B16	85.50
87	DB712-B07	89.75
87	DB712-B17	93.25
87	DB712-B00①	56.70
87	DB712-B10①	60.00
42-50 MHz Base Load Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
87	DB712-C01	$63 65
87	DB712-C11	68 50
87	DB712-C06	79 75
87	DB712-C16	85.50
87	DB712-C07	89.70
87	DB712-C17	93.25
87	DB712-C00①	56.70
87	DB712-C10①	60.00

66-88 MHz RANGE

Page No.	Model No.	Price
66-88 MHz Unity Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
88	DB718-D11	$43.50
88	DB718-D16	55 90
88	DB718-D17	70 75
88	DB718-D10①	36 50

132-512 MHz RANGE

Page No.	Model No.	Price
132-512 MHz Unity Gain Antenna Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
·	DB675-T01	$28 00
·	DB675-T06	40 00
·	DB675-T07	46.50
·	DB675-T00①	11 25
132-512 MHz Unity Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
89	DB710-T01	$28 85
89	DB710-T06	38 75
89	DB710 T07	54 50
89	DB710-T00①	11 25
135-512 MHz Broad Band Unity Gain Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
89	DB700-T11	$37.50
89	DB700-T10①	17.75

132-174 MHz RANGE

Page No.	Model No.	Price
132-174 MHz 2.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
90	DB720-E01	$53.50
90	DB720-E11	60.50
90	DB720-E06	68.50
90	DB720-E16	70.65
90	DB720-E07	77.00
90	DB720-E17	84.50
90	DB720-E00①	32.65
90	DB720-E10①	35.85
132-174 MHz 2.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
91	DB702-E01	$64.25
91	DB702-E11	70.65
91	DB702-E06	74.35
91	DB702-E16	81.25
91	DB702-E07	86.25
91	DB702-E17	90.00
91	DB702-E00①	47 00
91	DB702-E10①	51 25

406-420 MHz RANGE

Page No.	Model No.	Price
406-420 MHz 5.0dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
92	DB705-G11	$60 00
92	DB705-G16	70 00
92	DB705-G17	86 25
92	DB705-G10①	47 00
406-420 MHz 5.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
93	DB730-G01	$55.00
93	DB730-G11	61.50
93	DB730-G06	66.85
93	DB730-G16	70.65
93	DB730-G07	78.00
93	DB730-G17	83.00
93	DB730-G00①	34.25
93	DB730-G10①	38.00

450-470 MHz RANGE

Page No.	Model No.	Price
450-470 MHz 5.0dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
92	DB705-H11	$60.00
92	DB705-H16	70.00
92	DB705-H17	86.25
92	DB705-H10①	47.00
450-470 MHz 5.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
93	DB730-H01	$55.00
93	DB730-H11	61.50
93	DB730-H06	66.85
93	DB730-H16	70.65
93	DB730-H07	78.00
93	DB730-H17	83.00
93	DB730-H00①	34.25
93	DB730-H10①	38.00

①**(DBxxx-xxx) - Replacement Antenna Only** (No mounting hardware, cable or connector)

DECIBEL

MOBILE ANTENNAS

MINIMUM NET ORDER $100.00

470-488 MHz RANGE

470-488 MHz 5.0dB Gain Antenna
Complete with 15′ RG 58/U Cable and PL-259 Connector **CLASSIC**

Page No.	Model No.	Price
92	DB705-J11	$60.00
92	DB705-J16	70.00
92	DB705-J17	86.25
92	DB705-J10①	47.00

470-488 MHz 5.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector **DECISION**

93	DB730-J01	$55.00
93	DB730-J11	61.50
93	DB730-J06	66.85
93	DB730-J16	70.65
93	DB730-J07	78.00
93	DB730-J17	83.00
93	DB730-J00①	34.25
93	DB730-J10①	38.00

488-512 MHz RANGE

488-512 MHz 5.0dB Gain Antenna
Complete with 15′ RG 58/U Cable and PL-259 Connector **CLASSIC**

Page No.	Model No.	Price
92	DB705-K11	$60.00
92	DB705-K16	70.00
92	DB705-K17	86.25
92	DB705-K10①	47.00

488-512 MHz 5.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector **DECISION**

93	DB730-K01	$55.00
93	DB730-K11	61.50
93	DB730-K06	66.85
93	DB730-K16	70.65
93	DB730-K07	78.00
93	DB730-K17	83.00
93	DB730-K00①	34.25
93	DB730-K10①	38.00

406-870 MHz RANGE

406-870 MHz SPECIAL PURPOSE ANTENNA (No Ground Plane Required)
Complete with 15′ Low-Loss Cable and Connector

Page No.	Model No.	Description		Price
94	DB708-G20	Hardhat™	406-420	$84.25
94	DB708-H20	Hardhat™	450-470	84.25
94	DB708-J20	Hardhat™	470-488	84.25
94	DB708-K20	Hardhat™	488-512	84.25
102	DB726-L20N	Teardrop™	806-870	85.50

① **(DBxxx-xxx) - Replacement Antenna Only** (No mounting hardware, cable or connector)
② **Replacement Antenna with cable only.**

Hardhat, Teardrop, Lo-Pro, Button, SILHOUETTE, MAG-28 and DBglas are registered trademarks of Decibel Products Inc.

806-960 MHz SELECTION

806-960 MHz Lo-Pro™ and Button™ Antennas
Complete with 15′ RG 18/U Cable and Choice of Connector

Page No.	Model No.	Mount	Frequency Range	Price
98	DB740-P01N	Button™	806-960	$ 32.00
98	DB740-P01NC	Button™	806-960	29.25
98	DB740-P01TC	Button™	806-960	29.25
98	DB740-P01U	Button™	806-960	32.00
98	DB741-P01N	Button™	806-960	39.00
98	DB741-P01NC	Button™	806-960	36.00
98	DB741-P01TC	Button™	806-960	36.00
98	DB741-P01U	Button™	806-960	36.00
98	DB741-P01UC	Button™	806-960	36.00
98	DB741B-P01N	SILHOUETTE™	806-960	41.50
98	DB741B-P01NC	SILHOUETTE™	806-960	41.50
98	DB741B-P01TC	SILHOUETTE™	806-960	41.50
98	DB741B-P01U	SILHOUETTE™	806-960	41.50
98	DB741B-P01UC	SILHOUETTE™	806-960	41.50
98	DB741BG-P01N	Black-Gold	806-960	115.00
98	DB741BG-P01NC	Black-Gold	806-960	115.00
98	DB741BG-P01TC	Black-Gold	806-960	115.00
98	DB741BG-P01MU	Black-Gold	806-960	115.00
98	DB741BG-P01UC	Black-Gold	806-960	115.00

806-960 MHz Chrome 3.0dB Gain No-Hole Mount Elevated Feed Antenna
Complete with 15′ RG 58/U Cable and Choice of Connectors Factory Installed

100	DB737-P09N	Trunk Lip Elevated Feed	806-960	$66.25
100	DB737-P09NC	Trunk Lip Elevated Feed	806-960	66.25
100	DB737-P09TC	Trunk Lip Elevated Feed	806-960	66.25
100	DB737-P09U	Trunk Lip Elevated Feed	806-960	66.25
100	DB737-P09MUC	Trunk Lip Elevated Feed	806-960	66.25
100	DB737-P00②	Trunk Lip Elevated Feed	806-960	61.00

806-960 MHz 3.0dB Gain Silhouette™ Antennas, Black Versions of Cellular Antennas
Complete with 15′ RG 58/U Cable and Choice of Connectors Factory Installed

100	DB737B-P09N	SILHOUETTE™	806-960	$ 72.00
100	DB737B-P09NC	SILHOUETTE™	806-960	72.00
100	DB737B-P09TC	SILHOUETTE™	806-960	72.00
100	DB737B-P09U	SILHOUETTE™	806-960	72.00
100	DB737B-P09MUC	SILHOUETTE™	806-960	72.00
100	DB737B-P00②	SILHOUETTE™	806-960	66.50
100	DB737BG-P09N	Black-Gold	806-960	145.00
100	DB737BG-P09NC	Black-Gold	806-960	145.00
100	DB737BG-P09TC	Black-Gold	806-960	145.00
100	DB737BG-P09MU	Black-Gold	806-960	145.00

806-960 MHz Chrome 3.0dB Gain 1″ Hole Mount Elevated Antenna
Complete with 15′ RG 58/U Cable and Choice of Connectors

99	DB738-P19N	Elevated Feed Hole Mount	806-890	$112.50
99	DB738-P19NC	Elevated Feed Hole Mount	806-890	109.25
99	DB738-P19TC	Elevated Feed Hole Mount	806-890	109.25
99	DB738-N19N	Elevated Feed Hole Mount	806-890	112.50
99	DB738-N19NC	Elevated Feed Hole Mount	890-960	109.25
99	DB738-N19TC	Elevated Feed Hole Mount	890-960	109.25

821-890 and 890-960 MHz Chrome 3.0dB Gain Mag-28™ Antenna for
Temporary use with transportables
Complete with 10′ RG 58/U and TNC Crimp Connector

102	DB739-M07TC	MAG-28™	821-890	$44.00
102	DB739-N07TC	MAG-28™	890-960	44.00

NEW 824-960 MHz Black and Black Gold™ 3.0dB Gain DBglas™ Antennas
Complete with 15′ RG 58/U Cable and Choice of Connectors (Not Installed)

101	DB749B-M36TC	DBglas™	824-894	$ 59.75
101	DB749B-M36MUC	DBglas™	824-894	59.75
101	DB749BG-M36TC	Black-Gold	824-894	135.00
101	DB749BG-M36MU	Black-Gold	824-894	135.00
101	DB749B-N36TC	DBglas™	890-960	59.75

DECIBEL

MOBILE ANTENNAS

MINIMUM NET ORDER $100.00

ACCESSORIES — Classic Series

Page No.	Model No.	Description	Price
Whips			
104	11450	DB702, 712, 670, .100 Dia.	$21.00
104	11455	DB705-G	29.00
104	11460	DB705-H	29.00
104	11461	DB705-J	29.00
104	11462	DB705-K	29.00
104	11434	DB702, 712, .125 Dia.	11.50
Coils and Springs*			
104	11457	DB702-E0 Series	$29.00
104	11458	DB702-E1 Series	32.00
104	11500	DB712-A1 Series	30.00
104	11501	DB712-B1 Series	30.00
104	11502	DB712-C1 Series	30.00
104	11512	DB712-A0 Series	33.00
104	11513	DB712-B0 Series	33.00
104	11514	DB712-C0 Series	33.00
104	*11419	DB712-A, B, C Series	12.50
104	*11463	DB705-G, H, J, K Series	13.00
Complete Mounts			
103	11485	¾" Roof 30-36 MHz 712-A	$14.50
103	11486	¾" Roof 36-42 MHz 712-B	14.50
103	11487	¾" Roof 42-50 MHz 712-C	14.50
103	11488	¾" Roof 50-900 MHz 702, 705	14.50
103	11490	Trunk Lid 30-36 MHz 712-A	30.00
103	11491	Trunk Lid 36-42 MHz 712-B	30.00
103	11492	Trunk Lid 42-50 MHz 712-C	30.00
103	11493	Trunk Lid 50-900 MHz 702, 705	32.00
103	11494	Magnet 30-36 MHz 712-A	50.00
103	11495	Magnet 36-42 MHz 712-B	50.00
103	11496	Magnet 42-50 MHz 712-C	50.00
103	11497	Magnet 50-900 MHz 702, 705	50.00
Mounting Hardware			
103	11474	Chrome Dome™ 30-36 MHz	$10.50
103	11475	Chrome Dome™ 36-42 MHz	10.50
103	11476	Chrome Dome™ 42-50 MHz	10.50
103	11477	Chrome Dome™ 132-900 MHz	9.00
103	11465	¾" Hole Mount 30-900 MHz	5.75
104	11515	DB675 Series Whip Nut	5.50
104	11416	DB702, 712 Series Whip Nut	5.75
103	11417	"O" Ring and Gasket Kit	8.50
Mount Accessories			
103	11522	Set Screw Assortment	$5.00
103	11521	12 Hole Plugs	5.00
103	11523	Trunk Groove Mount	8.00
Accessories — Button™ Series			
103	11526	Mount, Chrome, less cable and connector, For DB740, DB741, 1 ea.	$6.50
104	11550	Mount, Chrome, with cable, For DB740, DB741, 1 ea.	20.25
104	11558	Mount, Black, with cable, For DB740, DB741, 1 ea.	23.50
Accessories — Connectors			
104	11562	Connectors, TNC crimp-on, For RG 58/U, 25 pk.	$178.50
104	11556	Connectors, Mini-UHF male crimp-on, For RG 58/U, 25 pk.	65.00
173	11312	Connectors, N male solder, For RG 58/U and RG 142, 4 pk.	19.00

ACCESSORIES — Decision Series

Page No.	Model No.	Description	Price
Whips			
103	11400	DB675, 710	$4.50
103	11430	DB720-E Series	11.25
104	11440	DB730-G Series	21.25
104	11441	DB730-H Series	21.25
104	11442	DB730-J Series	21.25
104	11443	DB730-K Series	21.25
103	11540	DB700 Series	5.50
Coils and Springs*			
104	11436	DB720-E Series	$17.85
104	11444	DB730-G Series	17.85
104	11445	DB730-H, J, K Series	17.85
104	*11419	DB718, 720, 730	12.50
Complete Mounts (Lo-Pro™)			
103	11409	Roof Mount 50-512 MHz	$24.00
103	11412	Magnet, 50-512 MHz	50.00
103	11415	Trunk Lid 50-512 MHz	32.00
Mounting Hardware			
104	11401	Whip Nut 720, 730	$5.50
104	11402	Whip Nut 710 Series	5.50
103	11403	Base Nut	5.50
103	11404	"O" Ring Kit	5.25
103	11407	Based Stud Assy.	7.00
103	11408	Base Stud with Cable	22.00
103	11413	Trunk Lid Less Cable	18.00

ACCESSORIES — Whips and Adaptors

Page No.	Model No.	Description	Price
104	11532	Whip and adaptor, Chrome, For DB741, 3dB, 1 ea.	$15.00
104	11535	Whip and adaptor, Chrome, For DB740, ¼ wave, 25 pk.	132.50
104	11557	Whip and adaptor, Black, For DB741, 1 ea.	18.00
104	11563	Whip and adaptor, Black, For DB737B, 1 ea.	18.00
104	11566	Whip and adaptor, Black, For DB749B (824-894), 1 ea.	11.40
104	11571	Whip and adaptor, Black, For DB749B (890-960), 1 ea.	11.40
104	11560	Whip and adaptor, Gold, For DB737BG, 1 ea.	79.00
104	11561	Whip and adaptor, Gold, For DB741BG, 1 ea.	79.00
104	11570	Whip and adaptor, Gold, For DB749BG, 1 ea.	60.00
Accessories — Whips			
104	11552	Whip, Chrome, For DB728, DB741, 3db, 1 ea.	$10.00
104	11553	Whip, Chrome, For DB737, DB738, 3db, 1 ea.	10.00
104	11554	Whip, Chrome, For DB738N, 3db, 1 ea.	10.00
104	11555	Whip Nut, Chrome, For DB737, DB738, DB741, 1 ea.	6.00
Accessories — DBglas™ Couplings			
104	11567	Exterior Coupling unit For DB749, 1 ea.	$12.80
104	11568	Interior Coupling unit For DB749, 1 ea.	35.80
104	11572	Exterior Coupling unit For DB749BG (Gold), 1 ea.	50.00
104	11569	Reinstall Kit for DB749B	4.25
Accessories — Brackets			
103	11548	⅜" Hole Black Silhouette™ no hole bracket, For DB737, DB737B, 1 ea.	$9.50
103	11549	¾" Hole Black Silhouette™ no hole bracket, For DB737, DB737B, 1 ea.	10.50

TERMS AND CONDITIONS

PRICES:
All prices shown on price list are F.O.B. factory, Dallas, Texas and include domestic packing. Terms are Net 30 days from date of shipment. Prices shown do not include any federal, state or local taxes. Export packing, if requested, will be at additional charge. **Prices are subject to change without notice.**

CREDIT APPROVAL:
Orders are subject to the approval of the Decibel's Credit Department. If credit is not approved, shipment of the ordered equipment can only be made with terms of Cash in Advance or Cash on Delivery.

ACCEPTANCE OF ORDERS:
Verbal orders are valid only at the prices stated on the most current price list, in effect at the time order is received. An order becomes officially accepted when Acknowledgment is forwarded to customer.

QUOTATIONS:
Quotations are valid for 30 days maximum, unless otherwise extended in writing. Quoted shipping costs are our best estimates only.

DOMESTIC TRANSPORTATION:
Shipments to be billed in accordance with the established prices as published by Numerex (domestic rates). Shipments will be routed by Decibel's best judgment unless carrier specified by Buyer can be utilized. Decibel is not responsible for selecting cheapest or fastest routing.

INTERNATIONAL TRANSPORTATION:
Shipping charges will include surface transportation to forwarder, forwarding charges documentation preparation, insurance and etc., when applicable.

DOMESTIC PACKING:
Packing suitable for Continental U.S. Transportation, surface or air, is used as standard on all Decibel products, Decibel's standard domestic packing on all products is suitable for international air shipment.

SPECIAL OR INTERNATIONAL SURFACE PACKING:
Export and/or special packing are at additional charges and are **estimates only.** Billing, packing only, may differ from these estimates, up to 10%.

DELAYS:
Decibel will not be liable for contractual obligations due to delays in shipments.

MODIFICATIONS:
Decibel reserves the right to modify equipment and change specifications without notice, provided the modification does not materially effect the performance of the equipment.

CLAIMS FOR DAMAGED OR LOST SHIPMENT:
Claims for damaged or lost material while material is in transit must be made immediately by the Buyer against the carrier. UPS shipment claims for damaged or loss of material may be made by Decibel.

CLAIMS FOR SHORTAGES:
Claims for shortages in shipments must be made within 30 days from date of shipment of material from Decibel's plant.

RETURN OF MATERIAL:
No material will be received or accepted by Decibel without written authorization. Decibel will not be responsible for any material returned without Decibel's prior written authorization or for material that is shipped freight collect. If due, credit not exceeding 80% of the original price will be allowed on unused material, provided it is returned prepaid and in new condition. Credit is issued only to the original purchaser and not to subsequent owner.

SPECIALS:
All Non-Standard catalog items are considered SPECIAL and are NON-CANCELLABLE and NON-RETURNABLE.

ABOUT DECIBEL PRODUCTS, INC. WARRANTIES

ALL PRODUCTS' BASIC LIMITED WARRANTY:

Decibel warrants that, at time of shipment, the products furnished by Decibel are free from defects in material and workmanship. The term of this warranty is limited to replacement or repair of such products within one year from the date of delivery to the first user. The defective product has to be returned by the first user to the Decibel factory, freight prepaid, independent of where the product was purchased. No products will be accepted for replacement or repair without prior written approval. Replacement or repair (DECIBEL'S OPTION) will be made only after an examination at Decibel's Dallas, Texas plant shows defective material or workmanship at the time of manufacture. THIS WARRANTY IS THE ONLY WARRANTY MADE BY DECIBEL AND IS GIVEN EXPRESSLY AND IN PLACE OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. DECIBEL IS NOT LIABLE FOR ANY OTHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, INSTALLATION COSTS, INCONVENIENCE, RENTAL OF REPLACEMENT EQUIPMENT, LOSS OF PROFITS OR OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF THE PRODUCTS MANUFACTURED BY DECIBEL, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT.

NEW EXTENDED TWO YEAR LIMITED WARRANTY* AND POWER AMPLIFIER LIMITED WARRANTY**

*The new EXTENDED TWO YEAR LIMITED WARRANTY is applicable to certain of Decibel Products' external dipole fixed station antennas. The antennas are:

DB222 Series
DB224 Series
DB228 Series
DB264 Series
DB268 Series
DB304 Series
DB404 Series
DB408 Series
DB411 Series
DB413 Series
DB420 Series

For this extended, basic plus one year, warranty to become effective, each antenna must be registered by returning the properly completed card, supplied with the antenna, directly to Decibel Products. The antenna will be replaced on an equal exchange basis including freight prepaid. An invoice will be sent which will be offset by a credit upon receipt and factory examination of the defective antenna. Before Decibel can honor the warranty, upon notification of defective antenna problem, advise if the antenna is registered. For the two year warranty to be effective, proof of date of receipt may be required. Upon verification of the Extended Limited Warranty a Return Authorization will be provided and the replacement order entered. In Canada a return could be sent to our authorized agent or distributor if purchased from them and if prior approval is given by them.

****BASE STATION AMPLIFIERS WARRANTY:** The Decibel basic one year warranty, plus one year from date of shipment from Decibel applies. Modified Static-to-Dynamic amplifiers will have the Decibel basic one year warranty on the modification and a one-year limited warranty can be purchased as an option on the power amplifier.

ILLUSTRATION OF PRE-ADDRESSED, POSTAGE PAID TWO YEAR WARRANTY REGISTRATION CARD

DECIBEL PRODUCTS, INC.
EXTENDED TWO YEAR LIMITED WARRANTY

To validate the two year limited warranty please complete the card and return it to DECIBEL PRODUCTS, INC. within ten days of receipt of the antenna.

NOT VALID OUTSIDE OF U.S.A. & CANADA

D.B. Order No. (or Invoice No.) ______________________ RECEIPT OF SHIPMENT DATE ______________
D.B. model no. ______________________ Use Frequency ______________________ MHz
The antenna is ______________ mounted on a ______________ at a height of ______ feet above the ground to the base.
(side or top) (tower, bldg., etc.)
The forward power is ______________________ watts, the reflected power is ______________________ watts.
Comments ____
Owner/User: ______________________ Installer: ______________________
Address: ______________________ Address: ______________________
______________________ ______________________
Signature: ______________________ Signature: ______________________

IN THE EVENT A PROBLEM OCCURS IS IT CLEAR THE PURCHASER HAS THE AUTHORITY OF THE OWNER TO OBTAIN A REPLACEMENT
☐ YES ☐ NO (IF NO, THE WARRANTY MAY NOT APPLY.)

"The Measurement of Performance"

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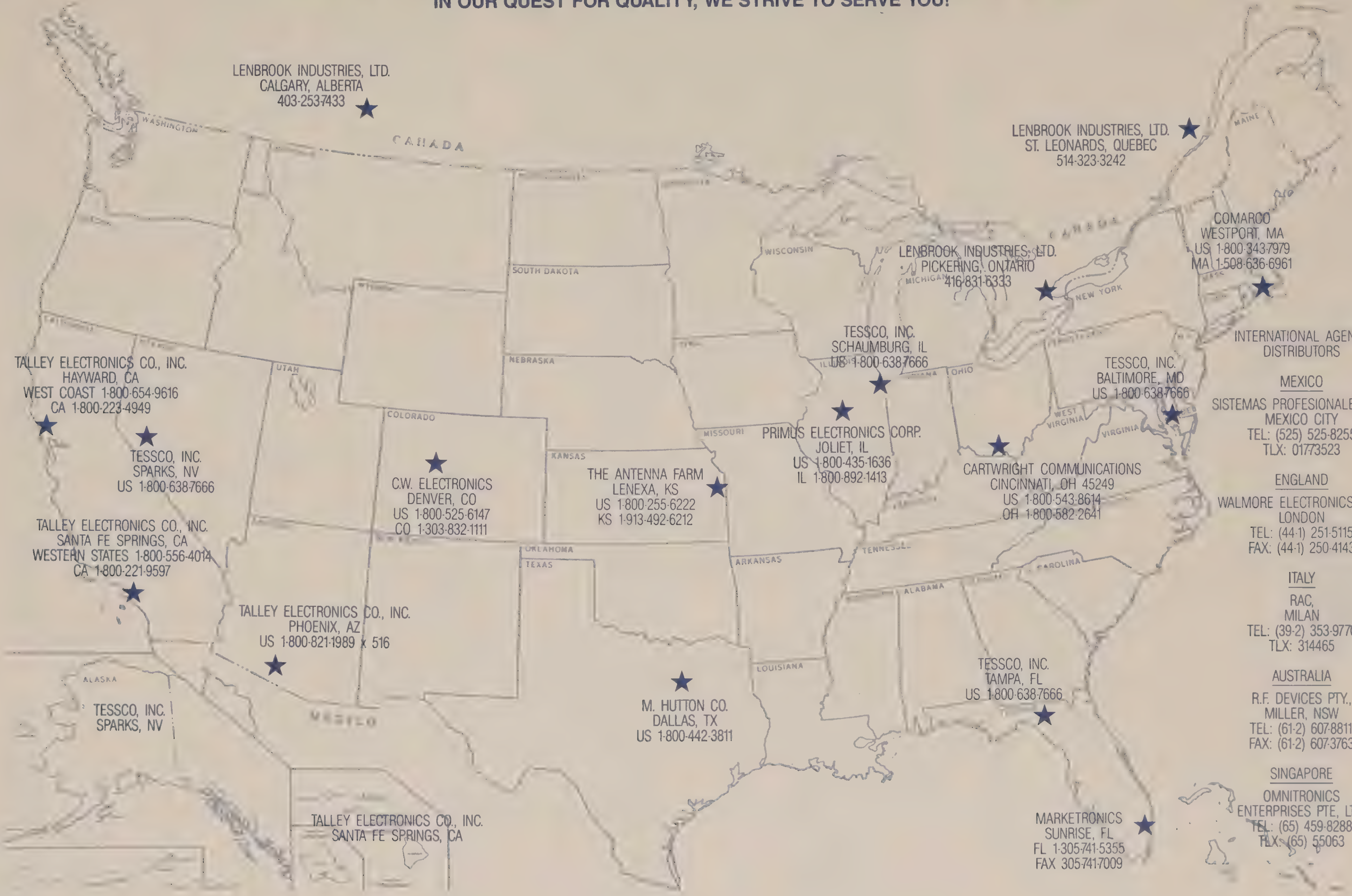
5/89

DECIBEL PRODUCTS QUALITY EQUIPMENT IS ALSO AVAILABLE NEAR YOU. HERE ARE ALL THE DECIBEL FACTORY AUTHORIZED WAREHOUSE AND AGENT LOCATIONS. IN OUR QUEST FOR QUALITY, WE STRIVE TO SERVE YOU!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PRICE LIST PL-21B

for

CONSOLIDATED CATALOG No. 21

EFFECTIVE JUNE 1, 1988

FOR
DECIBEL BASE AND MOBILE ANTENNA
SYSTEMS EQUIPMENT

DECIBEL PRODUCTS INC.

P.O. BOX 569610 DALLAS, TEXAS 75356-9610
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TWO YEAR WARRANTY ON
CERTAIN BASE STATION
ANTENNAS (SEE PAGES 1 & 2)!
ALSO SEE PAGE 18 FOR DETAILS OF WARRANTY.

NEW! ADDITIONAL AEROGLAS™
OMNI AND DIRECTIONAL BASE
STATION ANTENNAS.

NEW! DB 8860 MODULARLY EXPANDABLE
REMOTE SITE MONITOR.

INTRODUCING NON-DYNAMIC AND DYNAMIC LOW AND HIGH POWER CELLULAR BASE STATION AMPLIFIERS, STATIC-TO-DYNAMIC MODIFICATION OF CELLULAR BASE STATION AMPLIFIERS AND 100 WATT CELLULAR, SMR, PAGING AND CONVENTIONAL BASE STATION AMPLIFIERS.

NEW! 900 MHZ TRUNKED AND
RESERVE FREQUENCY CELLULAR SYSTEMS
PRODUCTS.

NOTE: FREQUENCIES SHOWN ARE FOR PRICING PURPOSES AND DO NOT NECESSARILY INDICATE BANDWIDTH. SPECIFY EXACT OPERATING FREQUENCIES WHEN ORDERING.

DECIBEL

BASE STATION ANTENNAS (30-960 MHz)

MINIMUM NET ORDER $50.00

Page	Model Number	Description	Gain in DB①	Frequency Range — MHz②							
				30-50	66-88	118-150③④	150-174	200-220	406-420	450-512	
5	DB201	Ground Plane, Heavy Duty***	Unity	$250.00	$235.00	$195.00	$183.00		$164.00	$164.00	
6	DB205	Coaxial, Heavy Duty***	Unity	292.00	247.00	222.00	188.00				
7/8	DB212 1	Side Mount (1 element)	2.5	269.00	225.00						
7/8	DB212 2	Side Mount Array (2 element)	3/6	459.00	423.00						
7/8	DB212-3	Side Mount Array (3 element)	4.5/7.5	712.00							
7/8	DB212-4	Side Mount Array (4 element)	6/9	1,050.00							
7/8	DB212-6	Side Mount Array (6 element)	7.5/10.5	1,573.00							
9	DB214	Bi-Directional Array	3.6	492.00	362.00	301.00	243.00				
9	DB214-2	Array (two phased DB214's)	6.	1,044.00	716.00	656.00	540.00				
10	DB222	Broadband Array, Omni**	3.			277.00	245.00				
10	DB222E	Broadband Array, Off-Center**	6.			277.00	245.00				
11	DB224	Broadband Array, Omni**	6.			484.00	444.00				
11	DB224E	Broadband Array, Off-Center**	9.			484.00	444.00				
11	DB224S	Dual Broadband Antenna, Omni**	3/3			484.00	444.00				
11	DB224ES	Dual Antenna, Off-Center**	6/6			484.00	444.00				
11	DB224-X	Broadband Array, Omni, Air Shippable**	6.			548.00	480.00				
12	DB225	Side Mount, Broad Pattern	5.	463.00	324.00	236.00	172.00				
12	DB225-2	Array (two phased DB225's)	8.	987.00	709.00	539.00	404.00				
13	DB228	Broadband Array, Omni**	9.			1,355.00	1,241.00				
13	DB228E	Broadband Array, Off-Center**	12.			1,355.00	1,241.00				
14	DB230	3 Element Yagi, Directional	7.	512.00	366.00	279.00	208.00				
14	DB230-2	Array (two phased DB230's)	10.	1,110.00	767.00	638.00	482.00				
15	DB248	Aeroglas™, Omni, CFC™, Aquamarine™ (mount 11570 $110.00)	3.					$ 434.00			
16	DB252	Para-Corner Reflector	8.				365.00				
16	DB252-2	Array (two phased DB252's)	11.				739.00				
16	DB252-4	Array (four phased DB252's)	14.				1,536.00				
17	DB254	Para-Corner Reflector	10.						272.00	258.00	
17	DB254-2	Array (two phased DB254's)	12.5						536.00	505.00	
17	DB254-4	Array (four phased DB254's)	15.						1,100.00	1,005.00	
18	DB264	Broadband Array, Omni**	6.				497.00				
18	DB264E	Broadband Array, Off-Center**	9.				497.00				
19	DB268	Broadband Array, Omni**	9.				1,391.00				
19	DB268E	Broadband Array, Off-Center**	12.				1,391.00				
20	DB274	Broadband Array, Omni	6.					880.00			
20	DB274E	Broadband Array, Offset	9.					880.00			
21	DB278	Broadband Array, Omni	9.					1,760.00			
21	DB278E	Broadband Array, Offset	12.					1,760.00			
22	DB286	Dual Yagi Array, 6-Element	10.	873.00	601.00	448.00	316.00				
22	DB286-2	Array (two phased DB286's)	13.	1,847.00	1,259.00	952.00	685.00				
22	DB286B	Dual Yagi, Bi-Directional	5/5	906.00	601.00	448.00	316.00				
23	DB292	6 Element Yagi, Directional	9.5				254.00				
23	DB292-2	Yagi Array, (2 phased 292's)	12.1				532.00				
23	DB292-4	Yagi Array (4 phased 292's)	14.7				1,093.00				
24	DB304	Broadband Array, Omni**	6.1				701.00				
24	DB304L	Broadband Array, Elliptical**	6.7				701.00				
24	DB304D	Dual Broadband, Omni**	3.2/3.2				719.00				
25	DB314	Broadband VHF and UHF	3. /6.6				1,353.00		1,353.00	1,353.00	
25	DB315	Broadband VHF and UHF	6. /9.2				2,490.00		2,490.00	2,490.00	
26	DB382-1	Six Element Yagi, Single Antenna	9.5					330.00			
26	DB382-2	Six Element Yagi, Dual Array	12.1					695.00			
26	DB382-4	Six Element Yagi, 4 Array	14.7					1,353.00			
26	DB382 8	Six Element Yagi, 8 Array	17.5					2,725.00			
27	DB404	Broadband, Omni**	3.8						213.00	213.00	
27	DB404L	Broadband, Elliptical**	5.						213.00	213.00	
28	DB408	Broadband, Omni**	6.6						371.00	371.00	
28	DB408L	Broadband, Elliptical**	7.8						371.00	371.00	
28	DB408D	Dual Broadband, Omni**	3.8/3.8						411.00	411.00	
28	DB408DL	Dual Broadband, Elliptical**	5. /5.						411.00	411.00	
29	DB408T 4	Omni, 4.5° Downtilt**	6.5							429.00	
29	DB408LT -4	Elliptical 4.5° Downtilt**	7.7							429.00	
29	DB408T -9	Omni, 9° Downtilt**	6.5							429.00	
29	DB408LT -9	Elliptical, 9° Downtilt**	6.5							429.00	
30	DB411	Broadband, Off-Center**	9.						280.00	280.00	
31	DB413	Broadband, Off-Center**	12.						542.00	542.00	
31	DB413D	Dual Broadband, Off-Center**	9. /9.						607.00	607.00	
32	DB420	Broadband, Omni**	9.2						613.00	613.00	
32	DB420L	Broadband, Elliptical**	10.4						613.00	613.00	
32	DB420D	Dual Broadband, Omni**	6.6/6.6						669.00	669.00	

SEE ANTENNA NOTES AT END OF BASE STATION ANTENNA SECTION

*TECHNICAL DATA AVAILABLE

**TWO YEAR WARRANTY. (SEE BACK OF PRICE LIST FOR LIMITATIONS.)

***30-50 MHz DB201 ($250.00) and DB205 ($292.00) are available uncut to frequency. Use L suffix when ordering.
144-174 MHz DB201 ($183.00) and DB205 ($188.00) are available uncut to frequency. Use M suffix when ordering.
406-512 MHz DB201 ($164.00) is available uncut to frequency. Use P suffix for 450-470 MHz and N suffix for 406-512 MHz when ordering.

ANTENNA MOUNTING KITS, CLAMPS AND BRACKETS

MINIMUM ORDER $50.00

Page	Model Number	Description	Price
175	DB365	Mounting clamps (set of two). Specify new (NS) or old style (OS) clamps. (New style, $42.00 List Price.)	$ 47.00
175	DB365W	Mounting clamps (set of two) for mounting antenna to wood pole.	64.00
175	DB365-SP5	Mounting clamp kit, 5″ width (set of two)	70.00
175	DB365-SP7	Mounting clamp kit, 7″ width (set of two)	101.00
175	DB370	Mounting clamps (set of two), Galvanized Strap ("Knock Down" — No Weld)	45.00
175	DB371	Mounting clamps (set of two, plus one clamp), Galvanized Strap ("Knock Down" — No Weld)	62.00
175	DB5001	Side Mount Kit for DB222, 224, 264, 304, 314 and 315 antennas. (5″ Available, DB5001-5 $233.00)	173.00
175	DB5002	Side Mount Kit for DB506W, 506WM antennas.	173.00
175	DB5004	Adjustable Side Mount Kit (two 10′ supports). Heavy duty. (5″ Available, DB5004-5 $487.00)	347.00
175	DB5007	Side Mount Kit for DB404, 426, 536, 580, 803, 806 antennas. (5″ Available, DB5007-5 $183.00)	136.00
175	DB5009	Mounting Bracket, for side by side mounting of DB436-2 antennas.	103.00
175	DB5012	Side Mount Kit for DB408, 411, 413, 420 antennas. (5″ Available, DB5012-5 $195.00)	169.00
175	DB5018	Mounting bracket, for quad mounting of DB436-4 antennas.	202.00
175	DB5020	Mounting bracket, for side by side mounting of DB292-2 antennas.	287.00
175	DB5080	Pipe Mount Kit for DB833/834 antennas.	115.00
175	11653	Mounting Clamp Kit, Vee Bolt for 1-3″ O.D. & 2″ angle (set of two)	31.00
175	11653-4	Mounting Clamp Kit, Vee Bolt for 4″ O.D. (set of two)	78.00
175	11653-5	Mounting Clamp Kit, Vee Bolt for 5″ O.D. (set of two)	93.00
175	11653-6	Mounting Clamp Kit, Vee Bolt for 6″ O.D. (set of two)	97.00
175	11653-7	Mounting Clamp Kit, Vee Bolt for 7″ O.D. (set of two)	100.00
175	11653-8	Mounting Clamp Kit, Vee Bolt for 8″ O.D. (set of two) (9″ Available, 11653-9-IN $105.00)	105.00

COPPER, CORRUGATED, FOAM-DIELECTRIC COAXIAL CABLE (ALL RADIAX® AND ACCESSORIES NOW AVAILABLE, CONSULT PLANT.②,③)

Page	Model Number	Description ①	Line Connectors Top	Line Connectors Bottom	Jumper Connectors Line	Jumper Connectors Equipment	Price
169*	DB2047	FSJ1-50 ¼″ Superflexible HELIAX®, jacketed cable only					$1.44 per foot
169*	DB2047-PK	Connector Kit Installed FSJ1-50, no jumper	NM	NM	n/a	n/a	46.00 kit
169*	DB2048	FSJ4-50B ½″ Superflexible HELIAX®, jacketed cable only					$3.22 per foot
169*	DB2048-PK	Connector Kit Installed FSJ4-50B, no jumper	NM	NM	n/a	n/a	101.00 kit
167*	DB2068	LDF4-50A ½″ foam COPPER HELIAX®, jacketed cable only					$2.15 per foot
		(Order 43818-41 for Cellular 824-894 MHz special order)					$2.30 per foot
167*	DB2068-NFNFPK	Connector Kit Installed LDF4-50A, no jumper	NF	NF	n/a	n/a	100.00 kit
167*	DB2068-UFNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-F	NF	n/a	n/a	99.80 kit
167*	DB2068-NMNFPK	Connector Kit Installed LDF4-50A, no jumper	NM	NF	n/a	n/a	100.00 kit
167*	DB2068-UMNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-M	NF	n/a	n/a	99.80 kit
167*	DB2068-NFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	NF	NF	NM	UHF-M	123.00 kit
167*	DB2068-UFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-F	NF	NM	UHF-M	122.80 kit
167*	DB2068-NMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	NM	NF	NM	UHF-M	123.00 kit
167*	DB2068-UMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-M	NF	NM	UHF-M	122.80 kit
167*	DB2068-NFNFW2	Connector Kit Installed LDF4-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	130.00 kit
167*	DB2078	LDF5-50A ⅞″ foam COPPER HELIAX®, jacketed cable only					$5.60 per foot
		(Order 42150B-48 for Cellular 824-894 MHz special order)					$6.00 per foot
167*	DB2078-NFNFPK	Connector Kit Installed LDF5-50A, no jumper	NF	NF	n/a	n/a	171.00 kit
167*	DB2078-UFNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-F	NF	n/a	n/a	170.50 kit
167*	DB2078-NMNFPK	Connector Kit Installed LDF5-50A, no jumper	NM	NF	n/a	n/a	171.00 kit
167*	DB2078-UMNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-M	NF	n/a	n/a	170.50 kit
167*	DB2078-NFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	NF	NF	NM	UHF-M	196.00 kit
167*	DB2078-UFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-F	NF	NM	UHF-M	195.50 kit
167*	DB2078-NMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	NM	NF	NM	UHF-M	196.00 kit
167*	DB2078-UMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-M	NF	NM	UHF-M	195.50 kit
167*	DB2078-NFNFW2	Connector Kit Installed LDF5-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	203.00 kit
167*	DB2086	LDF7-50A 1⅝″ foam copper HELIAX®, jacketed cable only					$13.20 per foot
167*	DB2086-PK	Connector Kit Installed LDF7-50A, no jumper	NF	NF	n/a	n/a	498.00 kit
167*	DB2088	LDF6-50 1¼″ foam copper HELIAX®, jacketed cable only					$9.70 per foot
167*	DB2088-PK	Connector Kit Installed LDF6-50, no jumper	NF	NF	n/a	n/a	287.00 kit

①Connector Kits on Foam-Dielectric cables (½″, ⅞″, 1¼″ and 1⅝″) as well as Superflexible cables (¼″ and ½″) include VaporWrap® and jumper specified. For tie wires see 11639 or 11649 model numbers.

②HELIAX® and RADIAX® are registered trademarks of Andrew Corp.

③RADIAX® Cable*: RXL4-1 $3.12/ft., RXL4-1RN $4.20/ft., RXL4-2 $3.65/ft., RXL4-2RN $4.80/ft., RXL4-3 $3.65/ft., RXL4-3RN $4.80/ft., RXL5-1 $6.55/ft., RXL5-1RN $8.30/ft. ASK ABOUT NEW 3/8 INCH LOW DENSITY RADIAX PRODUCTS.

COPPER, CORRUGATED, AIR DIELECTRIC CABLE

Page	Model Number	Description①	Connectors Top	Connectors Bottom	Price
168*	DB2074	HJ5-50 ⅞″ air copper HELIAX® — jacketed (for cellular order 25831-3, $7.10/ft.)			$6.67 per foot
168*	DB2074-PK	Connector Kit installed HF5-50	NF	NF	249.00
168*	DB2077	HJ7-50A 1⅝″ air copper HELIAX® — jacketed (for cellular order 25816A-31, $15.20/ft.)			$14.35 per foot
168*	DB2077-PK	Connector Kit installed HJ7-50A	NF	NF	539.00
168*	DB2089	HJ12-50 2¼″ air copper HELIAX® — jacketed (for cellular order 207760, $21.20/ft.)			$20.10 per foot
168*	DB2089-PK	Connector Kit installed HJ12-50	NF	NF	700.00

BULK ORDERS:
⅞″ cables — 300 to 2500 feet shipped on disposable reel
½″ cables — 500 to 4000 feet shipped on disposable reel

*March 15, 1989 Revised Price.

DECIBEL

ADDENDUM PL-21B-ADD
TO PRICE LIST PL-21B
(DECIBEL MANUFACTURED PRODUCTS' REVISED PRICES TO FOLLOW JUNE 1, 1989.)

COAXIAL CABLE ASSEMBLIES

MINIMUM ORDER $50.00

Page	Model Number	Description	Top Connector (Antenna End)	Bottom Connector	Price	
					Cable	Connector Kit
170	DB2029	DB8A/U Cable Only			$.83/ft.	
170	DB2029-NFNF	DB8A/U, Connectors Installed	Female N	Female N	.83/ft. plus	$23.00
170	DB2029-NMNF	DB8A/U, Connectors Installed	Male N	Female N	.83/ft. plus	23.00
170	DB2029-NFUM	DB8A/U, Connectors Installed	Female N	Male UHF	.83/ft. plus	23.00
170	DB2029-NMUM	DB8A/U, Connectors Installed	Male N	Male UHF	.83/ft. plus	23.00
170	DB2029-UMUM	DB8A/U, Connectors Installed	Male UHF	Male UHF	.83/ft. plus	23.00
170	DB2029-NMNM	DB8A/U, Connectors Installed	Male N	Male N	.83/ft. plus	23.00
170	DB2040	VB8 Vapor-Bloc® Cable Only			.93/ft.	
170	DB2040-NFNF	VB8 Vapor-Bloc®, Connectors Installed	Female N	Female N	.93/ft. plus	23.00
170	DB2040-NMNF	VB8 Vapor-Bloc®, Connectors Installed	Male N	Female N	.93/ft. plus	23.00
170	DB2040-NFUM	VB8 Vapor-Bloc®, Connectors Installed	Female N	Male UHF	.93/ft. plus	23.00
170	DB2040-NMUM	VB8 Vapor Bloc®, Connectors Installed	Male N	Male UHF	.93/ft. plus	23.00
170	DB2040-UMUM	VB8 Vapor-Bloc®, Connectors Installed	Male UHF	Male UHF	.93/ft. plus	23.00
170	DB2040-NMNM	VB8 Vapor-Bloc®, Connectors Installed	Male N	Male N	.93/ft. plus	23.00

***NOTE: Model Nos. DB2029 and DB2040 include two connectors and two 4 inch Vapor-Wrap® when connector kit ordered. For tie wires see 11639 or 11649 model numbers.**

3 TO 30 FT FLEXIBLE LEAD COXIAL CABLES, INCLUDES HELIAX® BRAND FOAM COPPER COAXIAL CABLE ASSEMBLIES ①

Page	Model Number	Description, Ft.	Connector	Connector	Price
170	DB11386	RG8 Type Flexible Cable, 8′	N-Male	N-Male	$30.00
170	DB11387	RG8 Type Flexible Cable, 8′	N-Male	N-Female	31.00
170	DB11388	RG8 Type Flexible Cable, 8′	N-Male	UHF-Male	30.00
170	DB11391	RG214 Type Double Shield, 8′	N-Male	N-Male	38.00
170	DB11392	RG214 Type Double Shield, 8′	N-Male	N-Female	38.00
170	DB11393	RG214 Type Double Shield, 8′	N-Male	UHF-Male	38.00
170	DB11394	RG214 Type Double Shield, 8′	UHF-Male	UHF-Male	33.00
170	DB11607	RG142 Type Double Shield, 1.5′	N-Male	N-Male	20.00
170	DB11608	RG142 Type Double Shield, 3′	N-Male	N-Male	23.00
170	DB11396	RG142 Type Double Shield, 8′	BNC-Male	UHF-Male	46.00
170	DB11397	RG142 Type Double Shield, 8′	BNC-Male	N-Male	46.00
170	DB11398	RG142 Type Double Shield, 8′	BNC-Male	N-Female	46.00
170*	DB11882	¼″ HELIAX Superflexible Cable, 8′	N-Male	N-Male	60.00
170*	DB11883	¼″ HELIAX Superflexible Cable, 8′	N-Male	UHF-Male	59.00
170*	DB11884	¼″ HELIAX Superflexible Cable, 8′	UHF-Male	UHF-Male	52.00
170*	DB11885	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	UHF-Male	53.50
170*	DB11886	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	N-Male	54.50
170*	DB11889	¼″ HELIAX Superflexible Cable, 8′	Phono	UHF	52.00

Page	Model Number	Description, Ft.	Connector	Connector	Price
170*	DB11888	½″ Superflexible, 8′	N-Male	N-Female	$120.00
170*	DB11891	½″ Superflexible, 8′	N-Male	N-Male	119.00
170*	DB11891-3	½″ Superflexible, 3′	N-Male	N-Male	96.00
170	DB11891-6	½″ Superflexible, 6′	N-Male	N-Male	104.00
171*	DB11891-10	½″ Superflexible, 10′	N-Male	N-Male	116.00
171	DB11891-15	½″ Superflexible, 15′	N-Male	N-Male	133.00
171*	DB11891-20	½″ Superflexible, 20′	N-Male	N-Male	149.00
171*	DB11891-25	½″ Superflexible, 25′	N-Male	N-Male	165.00
171*	DB11891-30	½″ Superflexible, 30′	N-Male	N-Male	181.00
171*	DB11887	½″ LDF Foam, 6′	N-Male	N-Female	95.00
171*	DB11890	½″ LDF Foam, 6′	N-Male	N-Male	95.00
171*	DB11890-3	½″ LDF Foam, 3′	N-Male	N-Male	85.00
171*	DB11890-10	½″ LDF Foam, 10′	N-Male	N-Male	100.00
171*	DB11890-15	½″ LDF Foam, 15′	N-Male	N-Male	110.00
171*	DB11890-20	½″ LDF Foam, 20′	N-Male	N-Male	121.00
171*	DB11890-25	½″ LDF Foam, 25′	N-Male	N-Male	132.00
171*	DB11890-30	½″ LDF Foam, 30′	N-Male	N-Male	143.00

CONNECTORS FOR COAXIAL CABLE

Page	Ordering Number	Description	Quantity in Package	Price
173	11301	PL259, Type UHF Male	pkg. of 12	$31.50
173	11302	UG175, Reducer insert for PL259	pkg. of 24	18.00
173	11303	PL258, Type UHF Junction	pkg. of 6	25.00
173	11304	M358, Type UHF Tee	pkg. of 2	21.00
173	11305	UG1185, Type N Male	pkg. of 3	25.00
173	11306	UG1186, Type N Female	pkg. of 3	31.50
173	11307	UG29, Type N junction	pkg. of 4	48.00
173	11308	UG146, Adaptor Connector	pkg. of 2	31.50
173	11309	UG83, Adaptor Connector	pkg. of 2	31.50
173	11310	34525-1001 N-Male Connector	pkg. of 2	17.00
173	11311	UG88 BNC Male for RG58	pkg. of 5	19.00
173	11312	UG536 Type N Male for RG142	pkg. of 4	19.00
173	11313	UG57 N Male-N Male adaptor	pkg. of 2	31.50
173	11319	UG28 Type N Tee Junction	pkg. of 2	43.00
173	11328	UG27D/U, Adaptor Connector	pkg. of 2	36.00
171*	11350	41SW, Type N Male (for ¼″ Superflexible)	pkg. of 1	12.50
171*	11351	41SP, UHF Male (for ¼″ Superflexible)	pkg. of 1	8.40
171*	11352	40622, BNC Male (for ¼″ Superflexible)	pkg. of 1	10.50
171*	11365	44ASR, ⅞″ EIA Flange (for ½″ Superflexible)	pkg of 1	120.00
171*	11369	44ASW, Type N Male (for ½″ Superflexible)	pkg of 1	33.50
171*	11376	44ASN, Type N Female (for ½″ Superflexible)	pkg of 1	34.50
171*	11377	44ASP, UHF Male (for ½″ Superflexible)	pkg. of 1	34.50
171*	11378	44ASU, UHF Female (for ½″ Superflexible)	pkg. of 1	34.50
171*	11379	49600, R/Angle N Male (for ½″ Superflexible)	pkg. of 1	68.80
171*	11370	L44P, Type UHF Male (for ½″ foam copper HELIAX®)	pkg of 1	25.60
171*	11371	L44U, Type UHF Female (for ½″ foam copper HELIAX®)	pkg of 1	25.60
171*	11372	L44W, Type N Male (for ½″ foam copper HELIAX®)	pkg of 1	28.80
171*	11373	L44N, Type N Female (for ½″ foam copper HELIAX®)	pkg of 1	28.80
171	11374	L44Z, Splice (for ½″ foam copper HELIAX®)	pkg of 1	90.00
171*	11375	L44R, ⅞″ EIA Flange (for ½″ foam copper HELIAX®)	pkg of 1	103.00

CONNECTORS FOR COAXIAL CABLE (Continued)

Page	Ordering Number	Description	Quantity in Package	Price
172*	11380	L45P, Type UHF Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	$66.50
172*	11381	L45U, Type UHF Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	66.50
172*	11382	L45W, Type N Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	70.00
172*	11383	L45N, Type N Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	70.00
172*	11384	L45Z, Splice (for ⅞″ foam copper HELIAX®)	pkg. of 1	118.00
172*	11385	L45R, ⅞″ EIA Flange (for ⅞″ foam copper HELIAX®)	pkg. of 1	108.00
172*	11363	L46W, N Male (for 1¼″ foam copper HELIAX®)	pkg. of 1	122.00
172*	11390	L46N, N Female (for 1¼″ foam copper HELIAX®)	pkg. of 1	122.00
172*	11395	L46Z, Splice (for 1¼″ foam copper HELIAX®)	pkg of 1	215.00
172*	11664	L46S, ⅞″ EIA Flange (for 1¼″ foam copper HELIAX®)	pkg. of 1	205.00
172*	11336	L47N, Type N Jack Female (for 1⅝″ foam copper HELIAX®)	pkg. of 1	225.00
172*	11337	L47Z, Splice (for 1⅝″ foam copper HELIAX®)	pkg. of 1	315.00
172*	11338	L47R, 1⅝″ EIA Flange (for 1⅝″ foam copper HELIAX®)	pkg. of 1	258.00
172*	11355	75AR, EIA Flange (for ⅞″ air cable)	pkg. of 1	115.00
172*	11356	75AN, Type N Jack Female (for ⅞″ air cable)	pkg of 1	90.00
172*	11357	75AW, Type N Plug Male (for ⅞″ air cable)	pkg of 1	92.00
172*	11358	75AZ, Splice (for ⅞″ air cable)	pkg. of 1	135.00
172*	11366	87S, Reducer connector to ⅞″ (for 1⅝″ air cable)	pkg. of 1	280.00
172*	11367	87N, Type N Jack Female (for 1⅝″ air cable)	pkg. of 1	235.00
172*	11368	87Z, Splice (for 1⅝″ air cable)	pkg. of 1	340.00
172*	11670	82N, Type N Female (for 2¼″ air copper HELIAX®)	pkg. of 1	300.00
172*	11671	82R, Type 1-5/8″ EIA Flange (for 2¼″ air copper HELIAX®)	pkg. of 1	310.00
173	11325	UG 274 BNC-TEE Adaptor	pkg of 2	18.00
GROUNDING KITS FROM PG. 5, PL-21B				
174*	11640	Grounding Kit, ½″ copper cable 204989-1	pkg of 1	$21.00
174*	11644	Grounding Kit, ⅞″ copper cable 204989-2	pkg of 1	26.50
174*	11662	Grounding Kit, 1¼″ copper cable 204989-3	pkg of 1	27.50
174*	11645	Grounding Kit, 1 ⅞″ copper cable 204989-4	pkg. of 1	27.50

HELIAX is a registered trademark of Andrew Corp.
①HELIAX leads have Andrew connectors, except phono type.

*March 15, 1989 Revised Price.

BASE STATION ANTENNAS (continued)

MINIMUM NET ORDER $50.00

Page	Model Number	Description	Gain in dB①	Frequency Range — MHz②					
				136-150③④	150-174	406-420	420-450	450-512	806-960
32	DB420DL	Dual Broadband, Elliptical**	6.6/6.6			$669.00		$669.00	
32	DB420Q	Quad Broadband, Omni**	3.8			746.00		746.00	
32	DB420QL	Quad Broadband, Elliptical**	3.8			746.00		746.00	
33	DB426	Broadband, "Rugged Duty,"	6.					850.00	
34	DB432	6 Element Yagi, Economy	8.					73.00	
35	DB436	6 Element Yagi, Flex Lead	10.			176.00	$176.00	167.00	
35	DB436-2	Array, (two phased DB436's)	13.			386.00	386.00	361.00	
35	DB436-4	Array, (four phased DB436's)	16.			781.00	781.00	746.00	
35	DB437	6 Element Yagi, Rugged, Flex Lead	10.			197.00	197.00	188.00	
35	DB437-2	Array (two phased DB437's)	13.			435.00	435.00	416.00	
35	DB437-4	Array (four phased DB437's)	16.			917.00	917.00	874.00	
35	DB438	6 Element Yagi, Boom Connector	10.			203.00	203.00	185.00	
35	DB438-2	Array (two phased DB438's)	13.			437.00	437.00	417.00	
106	DB492	6 Element Yagi, Economy	8.						$74.00
106	DB493	3 Element Yagi, Economy	6.						67.00
107	DB495	Corner Reflector	9.						261.00
107	DB495 2	Array (two phased DB495's)	12.						571.00
108	DB496	Cylindrical Parabola	13.5 dBi						314.00
108	DB496-2	Array (two phased DB496's)	16.0 dBi						678.00
106	DB498	6 Element Yagi, Rugged	9.						180.00
106	DB498-2	Array (two phased DB498's)	12.						422.00
109	DB499	7 Element Yagi, 20Db Front-to-Back	10.						198.00
36	DB506W	Aeroglas™, Omni	5.25		$533.00				
36	DB506WB	Aeroglas™, Omni, Narrow Band	5.50		485.00				
37	DB506WM	Aeroglas™, Aquamarine™, Omni	5.25		800.00				
38	DB536	Aeroglas™, Omni, CFC™	6.			410.00		410.00	
39	DB538	Aeroglas™, Omni, CFC™	8.			588.00		588.00	
40	DB540	Aeroglas™, Omni, CFC™	10.			740.00		740.00	

BASE STATION ANTENNAS (continued) 806-960 MHz② CONVENTIONAL TRUNKING AND PAGING

OMNI DIRECTIONAL AND DIRECTIONAL — 500 WATTS ⑥

Page	MODEL No.	Description	Gain in dB①	PRICE
110	DB580	Mirage™, Omni	Unity	$260.00
111	DB553⑥	Aeroglas™, Omni, CFC™	3.5	326.00
112	DB557⑥	Aeroglas™, Omni, CFC™	7.5	935.00
113	DB559⑥	Aeroglas™, Omni, CFC™	9.	998.00
113	DB559T3⑥	DB559, 3° Downtilt	8.	1,126.00
113	DB559T6⑥	DB559, 6° Downtilt	8.	1,126.00
113	DB559T10⑥	DB559, 10° Downtilt	8.	1,126.00
114	DB560⑥	Aeroglas™, Omni, CFC™	10.	1,103.00
114	DB560T3⑥	DB560, 3° Downtilt	9.	1,258.00
114	DB560T6⑥	DB560, 6° Downtilt	9.	1,258.00
114	DB560T10⑥	DB560, 10° Downtilt	9.	1,258.00
115	DB561⑥	170° 25dB Front-to-Back	11.	1,569.00
115	DB562⑥	150° 25dB Front-to-Back	12.	1,594.00
115	DB563⑥	135°, 25dB Front-to-Back	13.	1,619.00
116	DB563S10	135°, 20dB Front-to-Back	10.5	1,391.00
117	DB564⑥	120°, 25dB Front-to-Back	14.	1,644.00
117	DB564T3	DB564, 3° Downtilt	13.	1,972.00
117	DB564T6	DB564, 6° Downtilt	13.	1,972.00
117	DB564T10	DB564, 10° Downtilt	13.	1,972.00
118	DB564S12	120°, 25dB Front-to-Back	12.	1,255.00
119	DB567⑥	60°, 25dB Front-to-Back	17.	1,827.00
121	DB567Y⑥	Two DB567's Back-to-Back	17./17.	3,665.00
120	DB567R90⑥	DB567 Reverse Screen, 190°	10.	1,995.00

PAGE	MODEL No.	Description	Gain in dB①	PRICE
122	DB803	Broadband, Omni, FWD⑤⑦	3.	351.00
123	DB803XI	Broadband, Omni, FWD⑤⑦	3.	467.00
124	DB803Q	Quad DB803 FWD	3./3./3./3.	1,686.00
122	DB806	Broadband, Omni, FWD⑤⑦	6.	630.00
124	DB806TL	Triple DB806, 896-952 MHz	6./6./6.	2,409.00
123	DB806XI	Broadband, Omni, FWD⑤⑨	6.	746.00
124	DB806D	Broadband, Dual, Omni, FWD⑤	6./6.	1,581.00
122	DB809	Broadband, Omni, FWD⑤⑦	9.	912.00
123	DB809XI	Broadband, Omni, FWD⑤⑦	9.	1,028.00
125	DB833A⑧	105°, Rx, UPS Shippable	9.	717.00
125	DB833B⑧	105°, Tx, UPS Shippable	9.	717.00
126	DB833F⑧	105°, Tx & Rx, Broad Band	9.	957.00
127	DB834A⑧	105°, Rx, UPS Shippable	10.	911.00
127	DB834B⑧	105°, Tx, UPS Shippable	10.	911.00
128	DB834F⑧	105°, Tx & Rx, Broad Band	10.	1,219.00
129	DB860⑥	Min. Tip Deflection, Omni	10.	1,208.00

SEE ANTENNA NOTES AT END OF BASE STATION ANTENNA SECTION
*TECHNICAL DATA AVAILABLE
**TWO YEAR WARRANTY. (SEE BACK OF PRICE LIST FOR LIMITATIONS.)

BASE STATION ANTENNA NOTES

① Gain is with respect to a vertical half wave dipole, except as noted.

② **Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering specify exact operating frequency(s) for all items.**

③ Gain reduced slightly in 136-150 MHz band. Some products are special.

④ 118-136 MHz available as Special Order. Contact plant for details.

⑤ FWD: Full Wave Dipole, 110 MHz Bandwidth

⑥ Order special -Q models with EIA flange for 1,000 watts rating.

⑦ Use XIF Suffix for 28 inch long inversion mounting pipe extension with EIA flange — add $260.00 list price.

⑧ Available with pipe-to-pipe mounting option — $115.00 list price. DB833P-A, -B, -F are pressurized models — add $295.00 list price. DB833F-A, -B, -F are EIA flange, non-pressurized — add $260.00 list price.

Termination: Each antenna has a short flexible lead terminated with a **Type N male** connector. (Consult catalog for exceptions.) UHF termination is available on special order (using UG-83 Adapter – UHF male).

Mounting Clamps: Most antennas are supplied with mounting clamps. (Consult catalog for exceptions.)

Corrosion Protection: For antennas that are to be operated in corrosive atmosphere an Iridite chemical bath treatment is recommended. For this treatment add 30% (with a $100.00 net minimum) to the price of the antenna. Aeroglas™ antennas include Iridite treated support pipe. (Epoxy painted antennas, an additional 30% or $100.00 minimum require Iridite treatment to the aluminum before paint is applied.)

Precipitation Static: Precipitation static can be further reduced by wrapping radiator elements with polytape. Add 30% (with a $100.00 net minimum) to antenna price for polytape wrapping.

Frequency: Specify operating frequency on orders. All antennas are tested for minimum VSWR before shipment.

Dipole Stabilizers: VHF External Dipole Antennas DB222, 224, 228, 264, 268 and 304 can be ordered with two stabilizers per dipole for extreme environments. Consult Customer Service.

ANTENNA MOUNTING KITS, CLAMPS AND BRACKETS

MINIMUM ORDER $50.00

Page	Model Number	Description	Price
175	DB365	Mounting clamps (set of two). Specify new or old style clamps.	$ 47.00
175	DB365W	Mounting clamps (set of two) for mounting antenna to wood pole.	64.00
175	DB365-SP5	Mounting clamp kit, 5″ width (set of two)	70.00
175	DB365-SP7	Mounting clamp kit, 7″ width (set of two)	101.00
175	DB370	Mounting clamps (set of two), Galvanized Strap ("Knock Down" — No Weld)	45.00
175	DB371	Mounting clamps (set of two, plus one clamp), Galvanized Strap ("Knock Down" — No Weld)	62.00
175	DB5001	Side Mount Kit for DB222, 224, 264, 304, 314 and 315 antennas. (5″ Available, DB5001-5 $233.00)	173.00
175	DB5002	Side Mount Kit for DB506W, 506WM antennas.	173.00
175	DB5004	Adjustable Side Mount Kit (two 10′ supports). Heavy duty. (5″ Available, DB5004-5 $487.00)	347.00
175	DB5007	Side Mount Kit for DB404, 426, 536, 580, 803, 806 antennas. (5″ Available, DB5007-5 $183.00)	136.00
175	DB5009	Mounting Bracket, for side by side mounting of DB436-2 antennas.	103.00
175	DB5012	Side Mount Kit for DB408, 411, 413, 420 antennas. (5″ Available, DB5012-5 $195.00)	169.00
175	DB5018	Mounting bracket, for quad mounting of DB436-4 antennas.	202.00
175	DB5020	Mounting bracket, for side by side mounting of DB292-2 antennas.	287.00
175	DB5080	Pipe Mount Kit for DB833/834 antennas.	115.00
175	11653	Mounting Clamp Kit, Vee Bolt for 1-3″ O.D. & 2″ angle (set of two)	31.00
175	11653-4	Mounting Clamp Kit, Vee Bolt for 4″ O.D. (set of two)	78.00
175	11653-5	Mounting Clamp Kit, Vee Bolt for 5″ O.D. (set of two)	93.00
175	11653-6	Mounting Clamp Kit, Vee Bolt for 6″ O.D. (set of two)	97.00
175	11653-7	Mounting Clamp Kit, Vee Bolt for 7″ O.D. (set of two)	100.00
175	11653-8	Mounting Clamp Kit, Vee Bolt for 8″ O.D. (set of two) (9″ Available, 11653-9-IN $105.00)	105.00

COPPER, CORRUGATED, FOAM-DIELECTRIC COAXIAL CABLE (ALL RADIAX® AND ACCESSORIES NOW AVAILABLE, CONSULT PLANT.②,③)

Page	Model Number	Description ①	Line Connectors		Jumper Connectors		Price
			Top	Bottom	Line	Equipment	
169	DB2047	FSJ1-50 ¼″ Superflexible HELIAX®, jacketed cable only					$1.28 per foot
169	DB2047-PK	Connector Kit Installed FSJ1-50, no jumper	NM	NM	n/a	n/a	43.00 kit
169	DB2048	FSJ4-50B ½″ Superflexible HELIAX®, jacketed cable only					$2.88 per foot
169	DB2048-PK	Connector Kit Installed FSJ4-50B, no jumper	NM	NM	n/a	n/a	96.00 kit
167	DB2068	LDF4-50A ½″ foam COPPER HELIAX®, jacketed cable only					$1.92 per foot
		(Order 43818-41 for Cellular 824-894 MHz special order)					$2.05 per foot
167	DB2068-NFNFPK	Connector Kit Installed LDF4-50A, no jumper	NF	NF	n/a	n/a	92.00 kit
167	DB2068-UFNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-F	NF	n/a	n/a	92.00 kit
167	DB2068-NMNFPK	Connector Kit Installed LDF4-50A, no jumper	NM	NF	n/a	n/a	92.00 kit
167	DB2068-UMNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-M	NF	n/a	n/a	92.00 kit
167	DB2068-NFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	NF	NF	NM	UHF-M	115.00 kit
167	DB2068-UFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-F	NF	NM	UHF-M	115.00 kit
167	DB2068-NMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	NM	NF	NM	UHF-M	115.00 kit
167	DB2068-UMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-M	NF	NM	UHF-M	115.00 kit
167	DB2068-NFNFW2	Connector Kit Installed LDF4-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	122.00 kit
167	DB2078	LDF5-50A ⅞″ foam COPPER HELIAX®, jacketed cable only					$5.00 per foot
		(Order 42150B-48 for Cellular 824-894 MHz special order)					$5.35 per foot
167	DB2078-NFNFPK	Connector Kit Installed LDF5-50A, no jumper	NF	NF	n/a	n/a	156.00 kit
167	DB2078-UFNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-F	NF	n/a	n/a	156.00 kit
167	DB2078-NMNFPK	Connector Kit Installed LDF5-50A, no jumper	NM	NF	n/a	n/a	156.00 kit
167	DB2078-UMNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-M	NF	n/a	n/a	156.00 kit
167	DB2078-NFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	NF	NF	NM	UHF-M	181.00 kit
167	DB2078-UFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-F	NF	NM	UHF-M	181.00 kit
167	DB2078-NMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	NM	NF	NM	UHF-M	181.00 kit
167	DB2078-UMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-M	NF	NM	UHF-M	181.00 kit
167	DB2078-NFNFW2	Connector Kit Installed LDF5-50A, with 8 ft. RG214 jumper	NF	NF	NM	NM	188.00 kit
167	DB2086	LDF7-50A 1⅝″ foam copper HELIAX®, jacketed cable only					11.80 per foot
167	DB2086-PK	Connector Kit Installed LDF7-50A, no jumper	NF	NF	n/a	n/a	447.00 kit
167	DB2088	LDF6-50 1¼″ foam copper HELIAX®, jacketed cable only					8.62 per foot
167	DB2088-PK	Connector Kit Installed LDF6-50, no jumper	NF	NF	n/a	n/a	253.00 kit

① Connector Kits on Foam-Dielectric cables (½″, ⅞″, 1¼″ and 1⅝″) as well as Superflexible cables (¼″ and ½″) include VaporWrap® and jumper specified. For tie wires see 11639 or 11649 model numbers.

② HELIAX® and RADIAX® are registered trademarks of Andrew Corp.

③ RADIAX® Cable: RX4-1 $2.68/ft., RX4-1R $3.08/ft., RX4-2A $3.40/ft., RX4-2R $3.88/ft., RX4-3A $3.40/ft., RX4-3R $3.88/ft., RX5-1 $5.80/ft., RX5-1R $6.65/ft.

COPPER, CORRUGATED, AIR DIELECTRIC CABLE

Page	Model Number	Description①	Connectors		Price
			Top	Bottom	
168	DB2074	HJ5-50 ⅞″ air copper HELIAX® — jacketed (for cellular order 25831-3)			$5.94 per foot
168	DB2074-PK	Connector Kit installed HF5-50	NF	NF	$224.00
168	DB2077	HJ7-50A 1⅝″ air copper HELIAX® — jacketed (for cellular order 25816A-31)			12.78 per foot
168	DB2077-PK	Connector Kit installed HJ7-50A	NF	NF	483.00
168	DB2089	HJ12-50 2¼″ air copper HELIAX® — jacketed (for cellular order 207760)			18.00 per foot
168	DB2089-PK	Connector Kit installed HJ12-50	NF	NF	636.00

BULK ORDERS:

⅞″ cables — 300 to 2500 feet shipped on disposable reel
½″ cables — 500 to 4000 feet shipped on disposable reel

COAXIAL CABLE ASSEMBLIES

MINIMUM ORDER $50.00

Page	Model Number	Description	Top Connector (Antenna End)	Bottom Connector	Price	
					Cable	Connector Kit
170	DB2029	DB8A/U Cable Only			$.83/ft.	
170	DB2029-NFNF	DB8A/U, Connectors Installed	Female N	Female N	.83/ft. plus	$23.00
170	DB2029-NMNF	DB8A/U, Connectors Installed	Male N	Female N	.83/ft. plus	23.00
170	DB2029-NFUM	DB8A/U, Connectors Installed	Female N	Male UHF	.83/ft. plus	23.00
170	DB2029-NMUM	DB8A/U, Connectors Installed	Male N	Male UHF	.83/ft. plus	23.00
170	DB2029-UMUM	DB8A/U, Connectors Installed	Male UHF	Male UHF	.83/ft. plus	23.00
170	DB2029-NMNM	DB8A/U, Connectors Installed	Male N	Male N	.83/ft. plus	23.00
170	DB2040	VB8 Vapor-Bloc® Cable Only			.93/ft.	
170	DB2040-NFNF	VB8 Vapor-Bloc®, Connectors Installed	Female N	Female N	.93/ft. plus	23.00
170	DB2040-NMNF	VB8 Vapor-Bloc®, Connectors Installed	Male N	Female N	.93/ft. plus	23.00
170	DB2040-NFUM	VB8 Vapor-Bloc®, Connectors Installed	Female N	Male UHF	.93/ft. plus	23.00
170	DB2040-NMUM	VB8 Vapor Bloc®, Connectors Installed	Male N	Male UHF	.93/ft. plus	23.00
170	DB2040-UMUM	VB8 Vapor-Bloc®, Connectors Installed	Male UHF	Male UHF	.93/ft. plus	23.00
170	DB2040-NMNM	VB8 Vapor-Bloc®, Connectors Installed	Male N	Male N	.93/ft. plus	23.00

***NOTE: Model Nos. DB2029 and DB2040 include two connectors and two 4 inch Vapor-Wrap® when connector kit ordered. For tie wires see 11639 or 11649 model numbers.**

3 TO 30 FT FLEXIBLE LEAD COXIAL CABLES, INCLUDES HELIAX® BRAND FOAM COPPER COAXIAL CABLE ASSEMBLIES ①

Page	Model Number	Description, Ft.	Connector	Connector	Price
170	DB11386	RG8 Type Flexible Cable, 8′	N-Male	N-Male	$30.00
170	DB11387	RG8 Type Flexible Cable, 8′	N-Male	N-Female	31.00
170	DB11388	RG8 Type Flexible Cable, 8′	N-Male	UHF-Male	30.00
170	DB11391	RG214 Type Double Shield, 8′	N-Male	N-Male	38.00
170	DB11392	RG214 Type Double Shield, 8′	N-Male	N-Female	38.00
170	DB11393	RG214 Type Double Shield, 8′	N-Male	UHF-Male	38.00
170	DB11394	RG214 Type Double Shield, 8′	UHF-Male	UHF-Male	33.00
170	DB11607	RG142 Type Double Shield, 1.5′	N-Male	N-Male	20.00
170	DB11608	RG142 Type Double Shield, 3′	N-Male	N-Male	23.00
170	DB11396	RG142 Type Double Shield, 8′	BNC-Male	UHF-Male	46.00
170	DB11397	RG142 Type Double Shield, 8′	BNC-Male	N-Male	46.00
170	DB11398	RG142 Type Double Shield, 8′	BNC-Male	N-Female	46.00
170	DB11882	¼″ HELIAX Superflexible Cable, 8′	N-Male	N-Male	48.00
170	DB11883	¼″ HELIAX Superflexible Cable, 8′	N-Male	UHF-Male	47.00
170	DB11884	¼″ HELIAX Superflexible Cable, 8′	UHF-Male	UHF-Male	43.00
170	DB11885	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	UHF-Male	45.00
170	DB11886	¼″ HELIAX Superflexible Cable, 8′	BNC-Male	N-Male	46.00
170	DB11889	¼″ HELIAX Superflexible Cable, 8′	Phono	UHF	43.00

Page	Model Number	Description, Ft.	Connector	Connector	Price
170	DB11888	½″ Superflexible, 8′	N-Male	N-Female	$100.00
170	DB11891	½″ Superflexible, 8′	N-Male	N-Male	100.00
170	DB11891-3	½″ Superflexible, 3′	N-Male	N-Male	87.00
170	DB11891-6	½″ Superflexible, 6′	N-Male	N-Male	95.00
171	DB11891-10	½″ Superflexible, 10′	N-Male	N-Male	104.00
171	DB11891-15	½″ Superflexible, 15′	N-Male	N-Male	121.00
171	DB11891-20	½″ Superflexible, 20′	N-Male	N-Male	135.00
171	DB11891-25	½″ Superflexible, 25′	N-Male	N-Male	149.00
171	DB11891-30	½″ Superflexible, 30′	N-Male	N-Male	163.00
171	DB11887	½″ LDF Foam, 6′	N-Male	N-Female	81.00
171	DB11890	½″ LDF Foam, 6′	N-Male	N-Male	81.00
171	DB11890-3	½″ LDF Foam, 3′	N-Male	N-Male	76.00
171	DB11890-10	½″ LDF Foam, 10′	N-Male	N-Male	89.00
171	DB11890-15	½″ LDF Foam, 15′	N-Male	N-Male	99.00
171	DB11890-20	½″ LDF Foam, 20′	N-Male	N-Male	108.00
171	DB11890-25	½″ LDF Foam, 25′	N-Male	N-Male	117.00
171	DB11890-30	½″ LDF Foam, 30′	N-Male	N-Male	129.00

CONNECTORS FOR COAXIAL CABLE

Page	Ordering Number	Description	Quantity in Package	Price
173	11301	PL259, Type UHF Male	pkg. of 12	$31.50
173	11302	UG175, Reducer insert for PL259	pkg. of 24	18.00
173	11303	PL258, Type UHF Junction	pkg. of 6	25.00
173	11304	M358, Type UHF Tee	pkg. of 2	21.00
173	11305	UG1185, Type N Male	pkg. of 3	25.00
173	11306	UG1186, Type N Female	pkg. of 3	31.50
173	11307	UG29, Type N junction	pkg. of 4	48.00
173	11308	UG146, Adaptor Connector	pkg. of 2	31.50
173	11309	UG83, Adaptor Connector	pkg. of 2	31.50
173	11310	34525-1001 N-Male Connector	pkg. of 2	17.00
173	11311	UG88 BNC Male for RG58	pkg. of 5	19.00
173	11312	UG536 Type N Male for RG142	pkg. of 4	19.00
173	11313	UG57 N Male-N Male adaptor	pkg. of 2	31.50
173	11319	UG28 Type N Tee Junction	pkg. of 2	43.00
173	11328	UG27D/U, Adaptor Connector	pkg. of 2	36.00
171	11350	41SW, Type N Male (for ¼″ Superflexible)	pkg. of 1	10.25
171	11351	41SP, UHF Male (for ¼″ Superflexible)	pkg. of 1	6.85
171	11352	40622, BNC Male (for ¼″ Superflexible)	pkg. of 1	8.50
171	11365	44ASR, ⅞″ EIA Flange (for ½″ Superflexible)	pkg. of 1	105.00
171	11369	44ASW, Type N Male (for ½″ Superflexible)	pkg. of 1	29.00
171	11376	44ASN, Type N Female (for ½″ Superflexible)	pkg. of 1	29.00
171	11377	44ASP, UHF Male (for ½″ Superflexible)	pkg. of 1	29.00
171	11378	44ASU, UHF Female (for ½″ Superflexible)	pkg. of 1	29.00
171	11379	49600, R/Angle N Male (for ½″ Superflexible)	pkg. of 1	60.00
171	11370	L44P, Type UHF Male (for ½″ foam copper HELIAX®)	pkg. of 1	22.20
171	11371	L44U, Type UHF Female (for ½″ foam copper HELIAX®)	pkg. of 1	22.20
171	11372	L44W, Type N Male (for ½″ foam copper HELIAX®)	pkg. of 1	25.20
171	11373	L44N, Type N Female (for ½″ foam copper HELIAX®)	pkg. of 1	25.20
171	11374	L44Z, Splice (for ½″ foam copper HELIAX®)	pkg. of 1	87.00
171	11375	L44R, ½″ EIA Flange (for ½″ foam copper HELIAX®)	pkg. of 1	90.00

CONNECTORS FOR COAXIAL CABLE (Continued)

Page	Ordering Number	Description	Quantity in Package	Price
172	11380	L45P, Type UHF Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	$58.80
172	11381	L45U, Type UHF Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	58.80
172	11382	L45W, Type N Male (for ⅞″ foam copper HELIAX®)	pkg. of 1	61.80
172	11383	L45N, Type N Female (for ⅞″ foam copper HELIAX®)	pkg. of 1	61.80
172	11384	L45Z, Splice (for ⅞″ foam copper HELIAX®)	pkg. of 1	104.00
172	11385	L45R, ⅞″ EIA Flange (for ⅞″ foam copper HELIAX®)	pkg. of 1	94.00
172	11363	L46W, N Male (for 1¼″ foam copper HELIAX®)	pkg. of 1	104.00
172	11390	L46N, N Female (for 1¼″ foam copper HELIAX®)	pkg. of 1	104.00
172	11395	L46Z, Splice (for 1¼″ foam copper HELIAX®)	pkg. of 1	190.00
172	11664	L46S, ⅞″ EIA Flange (for 1¼″ foam copper HELIAX®)	pkg. of 1	177.00
172	11336	L47N, Type N Jack Female (for 1⅝″ foam copper HELIAX®)	pkg. of 1	197.00
172	11337	L47Z, Splice (for 1⅝″ foam copper HELIAX®)	pkg. of 1	250.00
172	11338	L47R, 1⅝″ EIA Flange (for 1⅝″ foam copper HELIAX®)	pkg. of 1	225.00
172	11355	75AR, EIA Flange (for ⅞″ air cable)	pkg. of 1	102.00
172	11356	75AN, Type N Jack Female (for ⅞″ air cable)	pkg. of 1	78.00
172	11357	75AW, Type N Plug Male (for ⅞″ air cable)	pkg. of 1	78.00
172	11358	75AZ, Splice (for ⅞″ air cable)	pkg. of 1	115.00
172	11366	87S, Reducer connector to ⅞″ (for 1⅝″ air cable)	pkg. of 1	245.00
172	11367	87N, Type N Jack Female (for 1⅝″ air cable)	pkg. of 1	205.00
172	11368	87Z, Splice (for 1⅝″ air cable)	pkg. of 1	295.00
172	11670	82N, Type N Female (for 2¼″ foam copper HELIAX®)	pkg. of 1	265.00
172	11671	82R, Type 1⅝″ EIA Flange (for 2¼″ foam copper HELIAX®)	pkg. of 1	275.00
173	11325	UG 274 BNC-TEE Adaptor	pkg. of 2	18.00

HELIAX is a registered trademark of Andrew Corp.
①HELIAX leads have Andrew connectors, except phono type.

MINIMUM ORDER $50.00

TWO ANTENNA MATCHING TRANSFORMERS

Page	Ordering Number	Frequency Range MHZ[1]	Connectors		Price
			Top/Tee	Final	
	11690-1	30-299	N FEMALE	N MALE	$75.00
	11690 2	30-299	N FEMALE	N FEMALE	75.00
	11690-3	30-299	UHF FEMALE	N MALE	75.00
	11690-4	30-299	UHF FEMALE	N FEMALE	75.00
	11690 5	30-299	UHF FEMALE	UHF MALE	75.00
	11690-6	30 299	N FEMALE	UHF MALE	75.00

TWO ANTENNA MATCHING TRANSFORMERS, WITH VB-8 PHASING HARNESS

Page	Ordering Number	Frequency Range MHZ[1]	Connectors		Price
			Feeders	Final	
	11680-1	30-299	UHF MALE	UHF MALE	$139.00
	11680-2	30-299	UHF MALE	N MALE	139.00
	11680-3	30-299	N FEMALE	N MALE	139.00
	11680-4	30-299	N MALE	N FEMALE	139.00
	11681-1	299-960	N FEMALE	N MALE	98.00
	11681-2	299-960	N MALE	N FEMALE	98.00
	11681-3	299-960	N FEMALE	N FEMALE	98.00
	11681-4	299-960	N MALE	N MALE	98.00

[1] **Exact frequency and the two identical DB antenna model numbers to be phased must be provided.**

[2] All connectors required must be specified. Frequencies in 299-960 MHz must be N-type connectors.

[3] The 11680 models have up to 19 ft. 50 OHM cable each side of the transformer.

[4] The 11681 models have up to 36 inches 50 OHM cable each side of the transformer.

[5] When matching three or more identical DB antennas, consult DB Systems Engineering for proper combination of above (special order).

MISCELLANEOUS KITS AND ACCESSORIES

Page	Ordering Number	Description	Quantity in Package	Price
170	11601	RG-214 Type Cable	25′ length	$ 56.00
170	11602	RG-214 Type Cable	50′ length	110.00
48	11603	RG-214 Type Interconnect Cable for DB4002A Cavities	pkg. of 1	23.00
48	11604	RG-214 Type Interconnect Cable for DB4002B Cavities	pkg. of 1	23.00
172	11616	RG142 Type Cable	25′ length	73.50
172	11617	RG142 Type Cable	50′ length	147.00
174	11621	Duplexer Cable Assembly	pkg. of 1	63.00
174	11641	Hoisting Grip ½″ jacketed copper cable 43094	pkg. of 1	27.00
174	11642	Hoisting Grip ⅞″ jacketed copper cable 19256B	pkg. of 1	38.50
174	11643	Hoisting Grip 1¼″ & 1⅝″ jacketed copper cable 24312A	pkg. of 1	47.50
174	11640	Grounding Kit, ½″ copper cable 204989-1	pkg. of 1	19.00
174	11644	Grounding Kit, ⅞″ copper cable 204989-2	pkg. of 1	24.00
174	11662	Grounding Kit, 1¼″ copper cable 204989-3	pkg. of 1	25.00
174	11645	Grounding Kit, 1⅝″ copper cable 204989-4	pkg. of 1	25.00
174	11901	Filament Tape, ½″	pkg. of 1	15.00
174	11902	Aluminum Tape, ¾″	pkg. of 1	23.00
174	11903	Electrical Tape, Cold Weather, ¾″	pkg. of 4	24.00
174	11904	Scotchkote Sealant	pkg. of 1	22.00
174	11905	RTV Sealant	pkg. of 1	17.00
174	11906	Silicone Compound	pkg. of 1	22.00
174	11907	Shrink Tube for ½″, RG8 type cable	pkg. of 4	12.00
174	11908	Shrink Tube for ⅞″ type cable	pkg. of 4	13.00
174	11317	Vapor Wrap 15 - 3″ × 4″ and, 15 - 3″ × 8″ pieces	pkg. of 30	37.00
174	11316	Vapor Wrap 3″ × 50 Ft. Roll	50 Ft. Roll	61.00
172	11667-1	Hardware kit, ⅜″, For Hanger Kits	pkg. of 10	12.50

MISCELLANEOUS KITS AND ACCESSORIES (Continued)

Page	Ordering Number	Description	Quantity in Package	Price
174	11646	Wall/Roof Feed Through, ¼″, ⅜″, ½″ cable 40656-3	pkg of 1	$ 48.00
174	11647	Wall/Roof Fed Through, ⅞″ cable 40656-1	pkg of 1	49.00
174	11663	Wall/Roof Feed Through, 1¼″ cable 40656-5	pkg of 1	60.00
174	11648	Wall/Roof Feed Through, 1⅝″ cable 40656-2	pkg of 1	70.00
174	11649	Tie Wires, Copperweld	pkg. of 100	19.00
174	11638	Nylon cable tie kit, black, 40417	pkg. of 50	33.00
174	11639	27290A Jacketed Tie Wires	pkg. of 20	6.50
174	11652	12395-1 Wraplock, 100 ft.	pkg. of 1	43.00
174	11658	Andrew 43211 ½″ Hanger Kit	pkg. of 10	30.50
174	11656	Andrew 42396A-5 ⅞″ Hanger Kit	pkg. of 10	40.00
174	11661	Andrew 42396A-1 1¼″ Hanger Kit	pkg. of 10	40.00
174	11655	Andrew 42396A-2 1⅝″ Hanger Kit	pkg. of 10	40.00
174	11654	Andrew 31768-A ⅞″ and 1⅝″ Angle Tower Adaptor	pkg. of 10	58.00
174	11652	Stainless steel straps 1½″-3½″ (quick release)①	pkg. of 10	32.50
174	11360	Stainless steel straps 1″-2″①	pkg. of 10	20.80
174	11361	Stainless steel straps 2″-3″①	pkg. of 10	23.00
174	11362	Stainless steel straps 3″-4″①	pkg. of 10	26.50
174	11665-1	Andrew 206706-1 ½″ Cable Snap-In Hanger	pkg. of 10	36.00
174	11665-2	Andrew 206706-2 ⅞″ Cable Snap-In Hanger	pkg. of 10	45.00
174	11665-3	Andrew 206706-3 1¼″ Cable Snap-In Hanger	pkg. of 10	45.00
174	11665-4	Andrew 206706-4 1⅝″ Cable Snap-In Hanger	pkg. of 10	45.00
172	11666-1	Pin pack, for L44N, N-Female	pkg of 5	5.00
172	11666-2	Pin pack, for L44W, N-Male	pkg. of 5	8.00
172	11666-3	Pin pack, for L45N, N-Female	pkg. of 5	60.00
172	11666-4	Pin pack, for L45W, N-Male	pkg. of 5	55.00

①**When using straps to secure cables also use hanger kits.**

BANDPASS CAVITIES

Page	Model Number	Description	Frequency Range — MHz①							
			30-50	66-88	120-150	150-174	225-400	406-420	450-512	806-960
44,45	DB4001-1	Single Cavity with Adjustable Loops				$162.00				
44,45	DB4001-2	Dual Cavity with Adjustable Loops				331.00				
44,45	DB4001-3	Triple Cavity with Adjustable Loops				471.00				
48	DB4002	Single Cavity with Adjustable Loops			$704.00	693.00		$693.00	$693.00	
44,45	DB4011-1	Single Cavity with Adjustable Loops		$224.00						
44,45	DB4011-2	Dual Cavity with Adjustable Loops		481.00						
44,45	DB4011-3	Triple Cavity with Adjustable Loops		704.00						
44,45	DB4015-1	Single Cavity with Adjustable Loops			167.00					
44,45	DB4015-2	Dual Cavity with Adjustable Loops			364.00					
44,45	DB4015-3	Triple Cavity with Adjustable Loops			557.00					
44,45	DB4018-1	Single Cavity with Adjustable Loops					$159.00			
44,45	DB4018-2	Dual Cavity with Adjustable Loops					351.00			
44,45	DB4018-3	Triple Cavity with Adjustable Loops					530.00			

BANDPASS CAVITIES (continued)

MINIMUM ORDER $50.00

Page	Model Number	Description	Frequency Range — MHz①							
			30-50	66-88	120-150	150-174	225-400	406-420	450-512	806-960
49	DB4020-1	Single Cavity with Adjustable Loops						$156.00		
49	DB4020-2	Dual Cavity with Adjustable Loops						347.00		
49	DB4020-3	Triple Cavity with Adustable Loops						530.00		
49	DB4021-1	Single Cavity with Adjustable Loops							$156.00	
49	DB4021-2	Dual Cavity with Adjustable Loops							339.00	
49	DB4021-3	Triple Cavity with Adjustable Loops							542.00	
50	DB4026W-1	Single Cavity for Rack Mounting						227.00	227.00	
50	DB4026W-2	Dual Cavity for Rack Mounting						442.00	442.00	
50	DB4026W-3	Triple Cavity for Rack Mounting						653.00	653.00	
131	DB4028-1	Single Cavity for Rack Mounting								$238.00
131	DB4028-2	Dual Cavity for Rack Mounting								464.00
131	DB4028-3	Triple Cavity for Rack Mounting								686.00
42	DB4042L-1	Single Cavity for 30-36 MHz band } Replaces DB4041	$ 693.00							
42	DB4042L-2	Dual Cavity for 30-36 MHz band	1,420.00							
42	DB4042M-1	Single Cavity for 36-42 MHz band	693.00							
42	DB4042M-2	Dual Cavity for 36-42 MHz band	1,420.00							
42	DB4042H-1	Single Cavity for 42-50 MHz band	693.00							
42	DB4042H-2	Dual Cavity for 42-50 MHz band	1,420.00							
46	DB4170-1	Single Cavity for Rack Mounting				$235.00				
46	DB4170-2	Dual Cavity for Rack Mounting				489.00				
46	DB4170-3	Triple Cavity for Rack Mounting				716.00				
46	DB4171-1	Single Cavity for Rack Mounting							238.00	
46	DB4171-2	Dual Cavity for Rack Mounting							495.00	
51	DB4176W	Shape Factored Filter® — 4 MHz (BW)						1,117.00	1,117.00	
47	DB4168	Shape Factored Filter® — 26 MHz (BW)				235.00				
47	DB8934	Shape Factored Filter® — 18 MHz (BW)			250.00					
47	DB8936	Shape Factored Filter® — 175 MHz (BW)					$250.00			
51	DB4177W	Shape Factored Filter® — 2 MHz (BW)							1,491.00	
133	DB4190H	Shape Factored Filter® — 15 MHz (BW), High Power								668.00
133	DB4190HWT	Shape Factored Filter® — High Power Tray								780.00
133	DB4192	Shape Factored Filter® — 15 MHz (BW), Interdigital								420.00
133	DB4192WT	Shape Factored Filter® — 15 MHz, Tray								549.00
134	DB4193-A or -B	Shape Factored Filter® — 10 MHz (BW)								420.00
134	DB4193WT-A or -B	Shape Factored Filter® — 10 MHz, Tray								549.00
132	DB4200	High Power Tx Filter — 15/20 MHz (BW)								975.00
51	DB4195	Shape Factored Filter® — 4 MHz (BW) w/2 notch filter, Interdigital							499.00	
133	DB4196-WT	Shape Factored Filter 5 MHz (BW)								549.00

NOTCH AND BAND-PASS/BAND-REJECT FILTERS (SEE NOTE BELOW)

Page	Model Number	Description	Frequency Separation (in KHz)②	Typical Rejection (in dB)	Frequency Range — MHz①			
					30-50	66-88	150-174	450-512
55	DB4022W-1	Single Band Pass — Notch Cavity for Rack Mounting	3 or 5 MHz	50/55				$227.00
55	DB4022W-2	Dual Band Pass — Notch Cavity for Rack Mounting	3 or 5 MHz	80/88				441.00
52,53	DB4104-1A	Single Notch Filter (Symmetrical) } Replaces DB4105	200	25	$ 706.00			
52,53	DB4104-1B	Single Notch Filter (Low Pass)	60	23	706.00			
52,53	DB4104-1C	Single Notch Filter (High Pass)	80	23	706.00			
52,53	DB4104-2A	Dual Notch Filter (Symmetrical) } Replaces DB4105	200	54	1,586.00			
25,26	DB4104-2B	Dual Notch Filter (Low Pass)	100	54	1,586.00			
25,26	DB4104-2C	Dual Notch Filter (High Pass)	160	54	1,586.00			
*	DB4120-1	Single Notch Filter	200/500	22/26		264.00		
*	DB4120-2	Single Notch Filter	200/500	49/55		533.00		
52,53	DB4140-1A	Single Notch Filter (Symmetrical)	500	23			$202.00	
52,53	DB4140-1B	Single Notch Filter (Low Pass)	150	20			202.00	
52,53	DB4140-1C	Single Notch Filter (High Pass)	180	20			202.00	
52,53	DB4140-2A	Dual Notch Filter (Symmetrical)	500	52			386.00	
52,53	DB4140-2B	Dual Notch Filter (Low Pass)	200	43			386.00	
52,53	DB4140-2C	Dual Notch Filter (High Pass)	280	43			386.00	
52,53	DB4140-3A	Triple Notch Filter (Symmetrical)	500	78			559.00	
52,53	DB4140-3B	Triple Notch Filter (Low Pass)	300	68			559.00	
52,53	DB4140-3C	Triple Notch Filter (High Pass)	350	66			559.00	
*	DB4162-1	Single BP/BR 8″ Cavity	300	35			228.00	
*	DB4162-2	Dual BP/BR 8″ Cavity	300	70			485.00	
*	DB4162-3	Triple BP/BR 8″ Cavity	300	105			732.00	
54	DB4175-1A	Single Notch Filter (Symmetrical)	500	17				202.00
54	DB4175-1B	Single Notch Filter (Low Pass)	180	13				202.00
54	DB4175-2B	Dual Notch Filter (Low Pass)	500	27				386.00
54	DB4175-2C	Dual Notch Filter	500	39				386.00
54	DB4175-3B	Triple Notch Filter	1000	40				559.00
54	DB4175-3C	Triple Notch Filter	800	60				559.00
44,49,52	DB5015	Cabinet for DB4140 and/or DB4175 series					242.00	242.00

NOTE: All Notch Filters are factory tuned before shipment. When ordering, specify exact pass and reject frequencies. ② Minimum frequency separation for no more than 1.0 dB insertion loss at pass frequency.

*TECHNICAL DATA AVAILABLE

① Figures do not necessarily indicate bandwidth — for pricing purposes only. Contact plant for details for other frequency ranges.
Shape Factored Filter is a registered trademark of Decibel Products, Inc.

PASS/NOTCH FILTERS (200-226) MHz

MINIMUM ORDER $50.00

Page	Model Number	Description	Frequency Range — MHz						
							200-226		
*	DB4158	Four 2¾ in. × 15½ in. Cavity Filter (Rx)					$1,014.00		
*	DB4159	Three 2¾ in. × 15½ in. Cavity Filter (Tx)					1,014.00		

STATION DUPLEXERS, ISOPLEXERS AND CABINETS

Page	Model Number	Description ①	Minimum Frequency Spacing (in MHz)	Power Rating (in watts)	Frequency Range — MHz ②					
					33-50	66-88	150-174	406-420	450-512	806-960
56	DB4003	Station Duplexer, 3-Cavity, BP	5.0	400			$ 498.00			
57	DB4030	Station Duplexer, 4-Cavity, BR	1.5	150	$1,054.00					
57	DB4032	Station Duplexer, 6-Cavity, BR	0.5	150	1,364.00					
56	DB4044	Station Duplexer, 4-Cavity, BP	4.0	400			643.00			
56	DB4046	Station Duplexer, 6-Cavity, BP	3.0	400			961.00			
*	DB4048	Use DB4060	0.5	400						
*	DB4050	Use DB4062								
58	DB4054	Rack Mount Duplexer, 4-Cavity, BR	5.0	150			471.00			
58	DB4055	Rack Mount Duplexer, 5-Cavity, BR	5.0	150			533.00			
58	DB4056	Rack Mount Duplexer, 6-Cavity, BR	2.0	150			671.00			
59	DB4057W	Rack Mount Duplexer, 3-Cavity, BP-BR	5.0	150			698.00			
59	DB4058W	Rack Mount Duplexer, 4-Cavity, BP-BR	3.0	150			980.00			
62	DB4060	Band Pass-Reject Duplexer, 4-Cavity	0.5	400			1,045.00			
62	DB4060-WC	Equipped with Cabinet	0.5	400			1,348.00			
62	DB4062	Band Pass-Reject Duplexer, 6-Cavity	0.3	400			1,568.00			
62	DB4062-WC	Equipped with Cabinet	0.3	400			1,898.00			
60	DB4067	Rack Mount Duplexer, 4-Cavity, BR	5.0	250				$532.00		
60	DB4068	Rack Mount Duplexer, 6-Cavity, BR	2.75	250				592.00		
60	DB4071	Rack Mount Duplexer, 4-Cavity, BR (450-470 MHz)	5.0	250					$453.00	
60	DB4072	Rack Mount Duplexer, 6-Cavity, BR	2.75	250					565.00	
63	DB4075W	Rack Mount Duplexer, 3-Cavity, BP-BR, Copper	5.0	250					551.00	
64	DB4075Z	Rack Mount Duplexer, 3-Cavity, BP-BR, Alum.	5.0	250					520.00	
63	DB4076W	Rack Mount Duplexer, 4-Cavity, BP-BR, Copper	3.0	250					709.00	
64	DB4076Z	Rack Mount Duplexer, 4-Cavity, BP-BR, Alum.	3.0	250					625.00	
135	DB4090	Rack Mount Duplexer, 2-Cavity, BP-BR	45.0	150						$ 478.00
*	DB4090S	Rack Mount Duplexer, 2-Cavity, BP-BR	<45.0	150						478.00
138	DB4096	Rack Mount Duplexer, 6-Cavity, BR (950-960 MHz)	3.6	150						666.00
136	DB4185H	Multiple frequency trunking interdigital duplexer	45.0	300						1,158.00
135	DB4402	Isoplexer BP-BR/w dual junction isolator	45.0	150						1,216.00
*	DB4402S-203	Isoplexer BP-BR/w dual junction isolator, 100w load	<45.0	150						1,216.00
44	DB5014	Outdoor weatherproof housing 30″ H × 24″ W × 8″ D			$627.00		627.00	627.00		
44,49,52	DB5015	Metal Cab. 30″ or 38″ H × 19″ W × 7⅛″ D					243.00	243.00	243.00	
44,56	DB5017	Metal Cabinet 60″ or 43″ or 33″ H × 19″ W × 8″ D					258.00	258.00	258.00	
*	DB5028	Outdoor weatherproof housing for 30″ H × 24″ W × 16″ D					680.00	680.00	680.00	

DUPLEXER (200-226 MHz)

Page	Model Number	Description ①	Minimum Frequency Spacing (in MHz)	Power Rating (in watts)	Frequency Range — MHz					
							200-226			
61	DB4100	Five Cavity Tx and Five Cavity Rx Duplexer, with Enclosure, 75dB Isolation	1.0	150+			$2,100.00			

① Refer to catalog sheets for complete description. When ordering, specify exact Tx and Rx frequencies. All duplexers are factory tuned. At a given frequency separation, the amount of isolation required between Tx and Rx varies with the different manufacturers models. Therefore, the minimum frequency spacing indicated above must be based on use of the duplexer with a "typical" radio model. **Factory will use — W suffix when latest design is phased into production.**

② **Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.**

*TECHNICAL DATA AVAILABLE

DECIBEL

NEW SUB-BAND OPTIMIZED CIRCULATORS, ISOLATORS, LOADS, HARMONIC FILTERS AND Z—MATCHERS

MINIMUM NET ORDER $50.00

Page	Model	Description	Freq. (MHz) ①	Isolation (dB)	Power (Watts)	Price
78	DB4315-B	High Power Circulator, Single, Broad Band	148-174	25	350	$993.00
78	DB4325-B	High Power Circulator, Single, Broad Band	450-512	25	350	555.00
76	DB4610-1A	Isolator, Single, Sub Band — Replaces DB4310, DB4311, DB4312, DB4313	118-128	30	150	358.00
76	DB4611-1A	Isolator, Single, Sub Band	126-138	30	150	358.00
76	DB4612-1A	Isolator, Single, Sub Band	132-148	30	150	358.00
76	DB4613-1A	Isolator, Single, Sub Band	148-160	30	150	358.00
76	DB4614-1A	Isolator, Single, Sub Band	160-174	30	150	358.00
76	DB4631-1A	Isolator, Single, Sub Band — Replaces DB4320, DB4321, DB4322, DB4323	406-450	30	150	358.00
76	DB4632-1A	Isolator, Single, Sub Band	450-512	30	150	358.00
148	DB4641-1A	Isolator, Single, Sub Band — Replaces DB4345, DB4348:	806-850	30	150	353.00
148	DB4642-1A	Isolator, Single, Sub Band	850-870	30	150	353.00
148	DB4643-1A	Isolator, Single, Sub Band (Also available in 895-920 and 920-960 MHz ranges.)	869-895	30	150	353.00
77	DB4610-2A	Isolator, Dual, Sub Band — Replaces DB4316	118-128	30	150	683.00
77	DB4611-2A	Isolator, Dual, Sub Band	126-138	30	150	683.00
77	DB4612-2A	Isolator, Dual, Sub Band	132-148	70	150	683.00
77	DB4613-2A	Isolator, Dual, Sub Band	148-160	70	150	683.00
77	DB4614-2A	Isolator, Dual, Sub Band	160-174	70	150	683.00
77	DB4631-2A	Isolator, Dual, Sub Band — Replaces DB4317	406-450	70	150	642.00
77	DB4632-2A	Isolator, Dual, Sub Band	450-512	70	150	642.00
149	DB4641-2A	Isolator, Dual, Sub Band — Replaces DB4346:	806-850	70	150	642.00
149	DB4642-2A	Isolator, Dual, Sub Band	850-870	70	150	642.00
149	DB4643-2A	Isolator, Dual, Sub Band (Also available in 895-920 and 920-960 MHz ranges.)	869-895	70	150	642.00
75	DB4331	Harmonic Filter	118-174		300	125.00
75	DB4332	Harmonic Filter	406-512		300	113.00
146	DB4333	Harmonic Filter	806-960		300	113.00
74,146	DB4601	Load-30 watt (DB4301, 25 watt isolator termination — $41.00)			30	53.00
74,146	DB4602	Load-60 watt (Replaces DB4302)			60	83.00
74,146	DB4303	Load-100 watt			100	171.00
74,146	DB4304B	Load-300 watt (Tray mounting may be required)			300	399.00
74	DB4328	Z-matcher	30-50		300	134.00
75	DB4329	Z-matcher	118-174		300	105.00
75	DB4330	Z-matcher	406-512		300	105.00
146	DB4340	Z-matcher (specify connectors)	806-960		300	103.00

NOTES: For SPACE SAVER™ option, providing right angle load connector, use:
-2B suffix and a $14.00 list price adder. -Single isolators include a DB4601 30 watt termination. -Dual isolators include a DB4601 30 watt and a DB4602 60 watt termination.

HYBRID COMBINERS AND ACCESSORIES

Page	Model	Description	Freq. (MHz) ①	Isolation (dB)	Power (Watts) ②	Price
74	DB4307	Hybrid Coupler-tunable	118-174	40	300	$ 412.00
74	DB4308	Hybrid Coupler-tunable	406-512	40	300	412.00
146	DB4309	Hybrid Coupler-tunable	806-960	40	300	366.00
147	DB4399	Five Channel Hybrid Coupler	935-940	30	300	③
70,71	DB4351-2	Two Tx Hybrid Combiner (tunable) Single Isolators	118-174	70	125	1,698.00
70,71	DB4352-2	Two Tx Hybrid Combiner (tunable) Dual Isolators	118-174	100	150	2,490.00
70,71	DB4353-2	Two Tx Hybrid Combiner (tunable) High Power, Single Isolators	118-174	70	350	4,288.00
70,71	DB4354-2	Two Tx Hybrid Combiner (tunable) High Power, Dual Isolators	118-174	100	350	7,077.00
70,71	DB4351-4	Four Transmitter Hybrid Combiner, Single Isolators	118-174	70	150	4,150.00
70,71	DB4352-4	Four Transmitter Hybrid Combiner, Dual Isolators	118-174	100	150	5,730.00
70,71	DB4353-4	Four Transmitter Hybrid Combiner, Single Isolators	118-174	70	300	9,550.00
70,71	DB4354-4	Four Transmitter Hybrid Combiner, Dual Isolators	118-174	100	300	15,120.00
72,73	DB4381-2	Two Tx Hybrid Combiner (tunable) Single Isolators	450-512	70	125	1,698.00
72,73	DB4382-2	Two Tx Hybrid Combiner (tunable) Dual Isolators	450-512	100	150	2,490.00
72,73	DB4383-2	Two Tx Hybrid Combiner (tunable) High Power, Single Isolators	450-512	70	350	1,934.00
72,73	DB4384-2	Two Tx Combiner (tunable) Hybrid, High Power, Two Isolators	406-512	100	350	3,780.00
72,73	DB4381-4	Four Transmitter Hybrid Combiner, Single Isolators	406-512	70	150	4,150.00
72,73	DB4382-4	Four Transmitter Hybrid Combiner, Dual Isolators	406-512	100	150	5,730.00
72,73	DB4383-4	Four Transmitter Hybrid Combiner, Single Isolators	406-512	70	300	4,830.00
72,73	DB4384-4	Four Transmitter Hybrid Combiner, Dual Isolators	406-512	100	300	8,520.00
144,145	DB4391-2	Two Tx Combiner, Hybrid, Single Isolators	806-960	70	150	1,322.00
144,145	DB4392-2	Two Tx Combiner, Hybrid, Dual Isolators	806-960	100	150	2,128.00
144,145	DB4393-2	Two Tx Combiner, Hybrid, Single Isolators	806-1000	70	350	1,842.00
144,145	DB4394-2	Two Tx Combiner, Hybrid, Dual Isolators	806-1000	100	350	2,778.00
144,145	DB4391-4	Single Isolator, 4 Channel	806-1000	70	150	3,245.00
144,145	DB4392-4	Single Isolator, 4 Channel	806-1000	100	150	4,673.00
144,145	DB4393-4	Dual Isolator, 4 Channel	806-1000	60	350	4,095.00
144,145	DB4394-4	Dual Isolator, 4 Channel	806-1000	100	350	6,563.00
144,145	DB4392-5	Five Transmitter Hybrid Combiner, Dual Isolators	935-940	100	300	③
144,145	DB4394-5	Five Transmitter Hybrid Combiner, Dual Isolators	935-940	100	300	③
147	DB4355	Hybrid Coupling Panel	118-174	40	100	735.00
147	DB4356	Hybrid Coupling Panel	118-174	40	300	948.00
147	DB4385	Hybrid Coupling Panel	406-512	40	100	735.00
147	DB4386	Hybrid Coupling Panel	406-512	40	300	948.00
147	DB4395	Hybrid Coupling Panel (DB4396 Coupling Panel, 300W $760.00)	806-960	40	100	545.00

① **Frequencies shown are for pricing and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.**
② Higher Powered Combiners can be furnished. Contact plant for details. ③ Quotation provided by Systems Engineering.

*TECHNICAL DATA AVAILABLE.

PROTECTION PANELS (Intermodulation), LOW PROFILE — 150 WATT

MINIMUM ORDER $50.00

Description — Configuration 150 Watts or Less	DB47 (XX) — (XX) = 10, 11, 12 13 or 14 Series 118-174 MHz①	DB47 (XX) — (XX) = 31 or 32 Series 406-512 MHz①	DB47 (XX) — (XX) = 41, 42, 43 44 or 45 Series 806-960 MHz①	Last 3 Digits of Model #
	Page 79	Page 79	Page 151	
Single Isol., 30w Load	$ 483.00	$ 483.00	$ 483.00	101
Single Isol., Harmonic Filter, 30w Load	600.00	600.00	600.00	111
Single Isol., 60w Load	506.00	506.00	506.00	102
Single Isol., Harmonic Filter, 60w Load	624.00	624.00	624.00	112
Single Isol., 100w Load	708.00	702.00	702.00	103
Single Isol., Harmonic Filter, 100w Load	813.00	807.00	807.00	113
Dual Isol., 30 Watt Load	764.00	726.00	726.00	201
Dual Isol., Harmonic Filter, 30w Load	872.00	833.00	833.00	211
Dual Isol., 100w Load	792.00	753.00	753.00	202
Dual Isol., Harmonic Filter, 60w Load	900.00	861.00	861.00	212
Dual Isol., 100w Load	984.00	947.00	947.00	203
Dual Isol., Harmonic Filter, 100w Load	1,089.00	1,052.00	1,052.00	213

150 WATT P.P. MODEL NUMBER NOMENCLATURE:
EXAMPLE: DB4710-201, IM Protection Panel in 118-128 MHz Sub-Band with dual isolators having a 30 watt termination. No harmonic filter.

MODEL DB47 ( ) — FREQUENCY SUB-BAND (150 WATT)
(10) 118-128 MHz
(11) 128-128 MHz
(12) 132-148 MHz
(13) 148-160 MHz
(14) 160-174 MHz
(31) 406-450 MHz
(32) 450-512 MHz
(41) 806-850 MHz
(42) 850-870 MHz
(43) 869-895 MHz
(44) 895-928 MHz
(45) 928-960 MHz

( ) ISOLATOR
(1) SINGLE
(2) DUAL

( ) HARMONIC FILTER
(0) WITHOUT
(1) WITH

( ) FINAL TERMINATION
(1) 30 WATT
(2) 60 WATT
(3) 100 WATT

HIGH POWER PROTECTION PANEL (Intermodulation), PANEL AND TRAYS — 350 WATT

Description — Configuration 350 Watts or Less	DB4713H- Series① 148-174 MHz	DB4713HT- Series① 148-174 MHz	DB47 (XX) H- (XX) = 31 or 32 Series① 406-512 MHz	DB47 (XX) HT- (XX) = 31 or 32 Series① 406-512 MHz	Last 3 Digits of Model #
	Page 79	Page 79	Page 79	Page 79	
Single Isol., 100w Load	$1,467.00	$1,569.00	$1,143.00	$1,259.00	103
Single Isol., Harmonic Filter, 100w Load	1,580.00	1,685.00	1,232.00	1,382.00	113
Single Isol., 300w Load	1,695.00	1,799.00	1,451.00	1,598.00	104
Single Isol., Harmonic Filter, 300w Load	1,808.00	1,920.00	1,502.00	1,629.00	114
Dual Isol., 100w Load	2,538.00	2,642.00	1,695.00	1,806.00	203
Dual Isol., Harmonic Filter, 100w Load	2,651.00	2,763.00	1,742.00	1,888.00	213
Dual Isol., 300w Load	2,766.00	2,871.00	1,832.00	1,899.00	204
Dual Isol., Harmonic Filter, 300w Load	2,879.00	2,985.00	1,877.00	1,954.00	214

350 WATT P.P. MODEL NUMBER NOMENCLATURE
EXAMPLE: DB4732HT-214, Protection Panel in 450-512 MHz band, dual isolators with 300 watt load and harmonic filter installed on panel/tray configuration.

MODEL DB47 ( ) — FREQUENCY SUB-BAND (350 WATTS)
(13) 148-174 MHz
(31) 406-450 MHz
(32) 450-512 MHz

( ) PANEL OR TRAY
(H) High Power Panel
(HT) High Power Tray

( ) ISOLATOR
(1) SINGLE
(2) DUAL

( ) HARMONIC FILTER
(0) WITHOUT
(1) WITH

( ) FINAL TERMINATION
(3) 100 WATT
(4) 300 WATT

CAVITY-FERRITE COMBINERS AND ACCESSORIES 132-512 MHz

Page	Model	Description	Freq. (MHz)①	Isolation (dB)	Power (Watts)	Price
65	DB4350-4	Four Tx Low Loss Combiner. Dual Isolators, Open Cabinet	118-174	80	150	$ 6,668.00
65	DB4350-8	Eight Tx Low Loss Combiner, Dual Isolators, Open Cabinet	118-174	65	150	13,335.00
66	DB4360-4	Four Tx Low Loss Combiner, (Rack Mount), 8″ Cavities	138-174	20	150	4,836.00
68	DB4365-4	Four Tx Low Loss Combiner, 5″×7″ Quarterwave Cavities	406-512	75	150	4,053.00
68	DB4365-5	Five Tx Low Loss Combiner, 5″×7″ Cavities (SP7365-5)	406-512	75	150	5,066.00
68	DB4365-8	Eight Ch Tx Low Loss Combiner, 5″×7″ Quarterwave Cavities	450-512	75	150	7,872.00
68	DB4365-10	Ten Tx Low Loss Combiner, 5″×7″ Cavities (SP7365-10)	406-512	75	150	10,132.00
68	DB4365-20	Twenty Tx Low Loss Combiner, 5″×7″ Cavities (SP7365-20)	406-512	75	150	20,265.00
69	DB4379-4	Four Tx Low Loss Combiner, Dual Isolators, Open Cabinet	406-512	70	150	6,295.00
69	DB4379-8	Eight Tx Low Loss Combiner, Dual Isolators, Open Cabinet	406-512	70	150	12,590.00
	DB4380-4	Four Tx Low Loss Combiner, Dual and Single Isolators, Open Cabinet	406-512	75	150	8,148.00
	DB4380-8	Eight Tx Low Loss Combiner, Dual and Single Isolators, Open Cabinet	406-512	75	150	16,296.00

①**Frequencies shown are for pricing purposes and do not necessarily indicate bandwidth. When ordering, specify exact operating frequency(s) for all items.**
②Higher Powered Combiners can be furnished. Contact plant for details.
③DB 4379 and DB 4380 Combiners are available in two, three, five and six channel models. Five and six channel models require one open cabinet only.

200 MHz LOW LOSS CAVITY-FERRITE COMBINERS

Page	Model	Description	Price
67	DB4369-4	Four Channel, Low-Loss Tx Combiner (Rack Mount) 8″ Cavities, Dual Isolators	$ 5,896.00
67	DB4369-8	Eight Channel, Low-Loss Tx Combiner (Rack Mount) 8″ Cavities, Dual Isolators	11,792.00

TOWER TOP RECEIVER AMPLIFIERS, WITH IMPROVED LIGHTNING PROTECTION, AND CROSSBAND COUPLERS

MINIMUM ORDER $50.00

Page	Model	Description		Freq. Range (MHz)	Price
139	DB8980P	Amplifier, Complete	20 dB GAIN AT 800 MHz	806-850	$3,996.00
139	DB8981P	Amplifier, Complete	20 dB GAIN AT 806-821 and 806-901 MHz	806-901	4,533.00
84	DB8982P	Amplifier, Complete	20 dB GAIN AT 456-460 and 466-470 MHz	456-470	6,337.00
84	DB8983P	Amplifier, Complete	20 dB GAIN AT 456-460, 466-470 and 806-821 MHz	456-800	6,804.00
139	DB8984P	Amplifier, Complete	20 dB GAIN AT 800 MHz, NO GAIN AT 450 MHz	450-512, 806-850	5,056.00
*	DB8985P	Amplifier, Complete	20 dB GAIN IN 4 MHz, BAND WIDTH (SP8148)	406-420	4,680.00

	Model	Description	Freq. (MHz)	Isolation (dB)	Power (Watts) ②	Price
43	DB4339-WB	Cross band coupler 450 MHz & 800 MHz/WITH MOUNT BRACKET (BOTTOM)	450-800	60	1000	$478.00
43	DB4339-WC	Cross band coupler 450 MHz and 800 MHz/WITH CABINET	450-800	60	1000	717.00

*TECHNICAL DATA AVAILABLE

30-512 MHz RECEIVER MULTICOUPLER

Page	Description				MODEL NUMBER①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8( )04 4 Chan.	DB 8( )08 8 Chan.	DB 8( )12 12 Chan.	DB 8( )16 16 Chan.	DB 8( )24 24 Chan.	DB 8( )32 32 Chan.	Last 3 Digits of Model #
80,81,82	Non-Expandable	115VAC	No	4 & 8	$ 964.00	$1,113.00	**	**	**	**	100
80,81,82	Non-Expandable	12-15VDC	No	4 & 8	935.00	1,040.00	**	**	**	**	200
80,81,82	Non-Expandable	220VAC	No	4 & 8	994.00	1,145.00	**	**	**	**	300
80,81,82	Non-Expandable	115VAC	Yes	4 & 8	1,143.00	1,294.00	**	**	**	**	-110
80,81,82	Non-Expandable	12-15VDC	Yes	4 & 8	1,123.00	1,278.00	**	**	**	**	210
80,81,82	Non-Expandable	220VAC	Yes	4 & 8	1,173.00	1,321.00	**	**	**	**	-310
80,81,82	Expandable in 4 Channel Steps	115VAC	No	4,8,12 & 16	1,173.00	1,395.00	$1,589.00	$1,830.00	**	**	-101
80,81,82	Expandable in 4 Channel Steps	12-15VC	No	4,8,12 & 16	1,099.00	1,321.00	1,515.00	1,735.00	**	**	-201
80,81,82	Expandable in 4 Channel Steps	220VAC	No	4,8,12 & 16	1,204.00	1,425.00	1,617.00	1,836.00	**	**	301
80,81,82	Expandable in 4 Channel Steps	115VAC	Yes	4,8,12 & 16	1,352.00	1,573.00	1,763.00	1,982.00	**	**	-111
80,81,82	Expandable in 4 Channel Steps	12-15VDC	Yes	4,8,12 & 16	1,277.00	1,500.00	1,690.00	1,909.00	**	**	211
80,81,82	Expandable in 4 Channel Steps	220VAC	Yes	4,8,12 & 16	1,382.00	1,604.00	1,792.00	2,011.00	**	**	311
80,81,82	Expandable in 8 Channel Steps	115VAC	No	8,16,24 & 32	**	1,914.00	**	2,173.00	$2,415.00	$2,845.00	-102
80,81,82	Expandable in 8 Channel Steps	12-15VDC	No	8,16,24 & 32	**	1,841.00	**	2,098.00	2,343.00	2,772.00	-202
80,81,82	Expandable in 8 Channel Steps	220VAC	No	8,16,24 & 32	**	1,945.00	**	2,203.00	2,445.00	2,874.00	-302
80,81,82	Expandable in 8 Channel Steps	115VAC	Yes	8,16,24 & 32	**	2,093.00	**	2,346.00	2,588.00	3,017.00	-112
80,81,82	Expandable in 8 Channel Steps	12-15VDC	Yes	8,16,24 & 32	**	2,130.00	**	2,271.00	2,515.00	2,945.00	-212
80,81,82	Expandable in 8 Channel Steps	220VAC	Yes	8,16,24 & 32	**	2,231.00	**	2,383.00	2,617.00	3,043.00	-312
80,81,82	High Performance Expandable	115VAC		4,8,12,16	1,615.00	1,837.00	2,022.00	2,265.00	**	**	-103
80,81,82	in 4 Channel Steps	12-15VDC	No	4,8,12,16	1,540.00	1,764.00	1,914.00	2,169.00	**	**	-203
80,81,82	Low Noise Expandable in 4 Channel Steps	115VAC	No	4,8,12,16	1,173.00	1,395.00	1,589.00	1,830.00	**	**	-104

( )=1-30 to 88 MHz, 2-148 to 174 MHz, 3-406 to 512 MHz, 4-118 to 136 MHz, 6-225 to 400 MHz.

Note: Factory will use -W Suffix on RX Multicouplers and Accessories when latest amplifier, chassis and power dividers are phased into production!

200 MHz RECEIVER MULTICOUPLER

Page	Description				MODEL NUMBER①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8(7)04 4 Chan.	DB 8(7)08 8 Chan.	DB 8(7)12 12 Chan.	DB 8(7)16 16 Chan.	DB 8(7)24 24 Chan.	DB 8(7)32 32 Chan.	Last 3 Digits of Model #
82	Expandable in 4 Channel Steps	115VAC	No	4-32	$1,489.00	$1,676.00	$1,897.00	$2,117.00	**	**	-101

*Consult Customer Service.
**Not available as standard.
①Specify frequency when ordering
(7)=200 to 220 MHz

Note: Shape Factored Filter® preselectors are available. Contact Customer Service for further details.

MINIMUM NET ORDER $50.00

800 MHz CONVENTIONAL, TRUNKED AND CELLULAR COMBINING SYSTEMS AND ACCESSORIES, including 900 MHz PAGING

Page	Model	Description	Freq. (MHz)	Isolation Tx Tx (dB)	Insertion Loss (dB)	Power (Watts)	Price
140	DB4458	5 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	2.0①	150	$ 4,855.00
140	DB4458-2	10 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70②	3.0②	150	9,737.00
140	DB4482	2 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	1.7①	150	2,403.00
140	DB4483	3 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	1.7①	150	2,779.00
140	DB4483-2	6 CH Tx Low Loss Cube® Filter, Dual Isolator Combiner	850-870	70①	2.2①	150	5,557.00
142	DB8061-2	2 CH Tx ¾ Wave 5 x 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.1⑤	150	1,433.00
142	DB8061-3	3 CH Tx ¾ Wave 5 x 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.2⑤	150	2,149.00
142	DB8061-5	5 CH Tx ¾ Wave 5 x 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.4⑤	150	3,551.00
142	DB8061-10	10 CH Tx ¾ Wave 5 x 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	3.9⑤	150	6,859.00
142	DB8061-20	20 CH Tx ¾ Wave 5 x 7 Cavity, Single Isolator, Combiner④	850-890	48⑤	4.4⑤	150	13,718.00
142	DB8061-WB	Single Expansion CH, w/Bracket, Single Isolator④	850-890			150	758.00
142	DB8061-WOB	Single Expansion CH, w/oBracket, Single Isolator④	850-890			150	747.00
142	DB8060-2	2 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.3⑤	150	2,107.00
142	DB8060-3	3 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.4⑤	150	3,161.00
142	DB8060-4	4 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.5⑤	150	4,214.00
142	DB8060-5	5 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.7⑤	150	5,238.00
142	DB8060-6	6 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.8⑤	150	6,233.00
142	DB8060-7	7 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	3.9⑤	150	7,216.00
142	DB8060-8	8 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.0⑤	150	8,187.00
142	DB8060-9	9 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.1⑤	150	9,210.00
142	DB8060-10	10 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.2⑤	150	10,234.00
142	DB8060-11	11 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.3⑤	150	11,257.00
142	DB8060-12	12 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.3⑤	150	12,281.00
142	DB8060-13	13 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.3⑤	150	13,303.00
142	DB8060-14	14 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.4⑤	150	14,328.00
142	DB8060-15	15 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.5⑤	150	15,349.00
142	DB8060-16	16 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.5⑤	150	16,374.00
142	DB8060-17	17 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.5⑤	150	17,397.00
142	DB8060-18	18 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.6⑤	150	18,420.00
142	DB8060-19	19 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.6⑤	150	19,443.00
142	DB8060-20	20 CH Tx ¾ Wave 5 x 7 Cavity, Dual Isolator, Combiner④	850-890	78⑤	4.6⑤	150	20,468.00
142	DB8060-PNL	Tenth to Eleventh CH Junction Panel	850-890			150	365.00
142	DB8060-WB	Single Expansion CH w/Bracket, w/Dual Isolator④	850-890			150	1,053.00
142	DB8060-WOB	Single Expansion CH w/oBracket, w/Dual Isolator④	850-890			150	1,042.00
143	DB8081-4	4 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	1.9⑥	50	2,980.00
143	DB8081-8	8 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.3⑥	50	5,707.00
143	DB8081-16	16 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.8⑥	50	11,414.00
143	DB8081-5	5 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.0⑥	50	3,551.00
143	DB8081-9	9 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.2⑥	50	6,420.00
143	DB8081-10	10 CH Tx Combiner, Dielectrically Loaded, Single Isolator③	870-896	40⑥	2.4⑥	50	6,859.00
143	DB8080-4	4 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	870-896	70⑥	2.2⑥	50	4,214.00
143	DB8080-8	8 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	870-896	70⑥	2.6⑥	50	8,187.00
143	DB8080-16	16 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	870-896	70⑥	3.2⑥	50	16,374.00
143	DB8080-5	5 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	851-896	70⑥	2.4⑥	50	5,238.00
143	DB8080-9	9 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	870-896	70⑥	2.7⑥	50	9,210.00
143	DB8080-10	10 CH Tx Combiner, Dielectrically Loaded, Dual Isolator③	851-896	70⑥	2.9⑥	50	10,234.00
43	DB4502	5 x 7 Inch Cavity, Dual Isolator, Paging Panel (Was DB4500)	928-933	70	1.8	150	1,053.00
136	DB4185H	T & R Single Antenna, BP Duplexer	806-890	60/85①	1.2/0.9	300	1,158.00
133	DB4192	Shape Factored Filtered®-15MHz (BW), Interdigital	806-960				420.00
133	DB4192WT	DB4192 Filter, with tray	806-960				549.00
	DB60RACK	5 Ft. Rack, with equipment installed					813.00
	DB70RACK	6 Ft. Rack, with equipment installed					858.00

① 1 MHz Tx-Tx spacing.
② 500 KHz Tx-Tx spacing.
③ Additional technical data available upon request. DB8080 Series combiners available for cellular only initially. 800MHz conventional & trunked systems to follow. Consult Customer Service.
④ Configuration permits single channel expansion. DB8060 series combiners use Serpentine™ cabling for 250 KHz and greater Tx-Tx spacings.
⑤ At 250 KHz Tx-Tx spacing.
⑥ At 630 KHz Tx-Tx spacing.
NOTE: Consult Systems Engineering for specifications and for price of DB8080 series combiners, without isolators.

MINIMUM NET ORDER $50.00

800 MHz RECEIVER MULTICOUPLER

Page	Description				MODEL NUMBER①						
	Multicoupler Configuration (Power Splitter and R.F. Amp Use)	Power Input	Preselector	Available in Chan. Models	DB 8(5)04 4 Chan.	DB 8(5)08 8 Chan.	DB 8(5)12 12 Chan.	DB 8(5)16 16 Chan.	DB 8(5)24 24 Chan.	DB 8(5)32 32 Chan.	Last 3 Digits of Model #
152,153	Expandable in 4 Channel Steps	115VAC	No	4,8,12 & 16	$1,764.00	$2,011.00	$2,259.00	$2,508.00	**	**	-101
	Expandable in 4 Channel Steps	12-15VDC	No	4,8,12 & 16	1,701.00	1,949.00	2,203.00	2,445.00	**	**	-201
	Expandable in 4 Channel Steps	220VAC	No	4,8,12 & 16	1,788.00	2,036.00	2,285.00	2,532.00	**	**	-301
	Low Noise Expandable in 4 Channel	115VAC	No	4,8,12 & 16	1,764.00	2,011.00	2,259.00	2,508.00	**	**	-104
152,153	Expandable in 8 Channel Steps	115VAC	No	8,16,24 & 32	**	1,942.00	**	2,289.00	$2,636.00	$2,983.00	-102
	Expandable in 8 Channel Steps	12-15VDC	No	8,16,24 & 32	**	1,803.00	**	2,080.00	2,568.00	2,775.00	-202
	Expandable in 8 Channel Steps	220VAC	No	8,16,24 & 32	**	1,903.00	**	2,180.00	2,594.00	2,983.00	-302

ACCESSORIES — RECEIVER MULTICOUPLER

Page	Model Number①	Description	Price
81,83	DB8900	Receiver Multicoupler Chassis and Frame only	$580.00
81,83	DB8918	4-Way Power Splitter (30-512 MHz), BNC input/output	220.00
81,83	DB8919	8-Way Power Splitter (30-512 MHz), BNC input/output	291.00
81	DB8920	4-Way Power Splitter (800-960 MHz), BNC input/output	291.00
153	DB8921	8-Way Power Splitter (800-960 MHz), BNC input/output	367.00
81	DB8922	50 ohm Dummy Load, BNC (Power Splitter)	7.50
81,153	DB8923-8N	8 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	278.00
81,153	DB8923-12N	12 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	392.00
81,153	DB8923-24N	24 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit w/Panel	772.00
*	DB8924-8N	8 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	341.00
*	DB8924-12N	12 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	458.00
*	DB8924-24N	24 Ch — 19′ Rack Mounted BNC to N-Female Connector Kit on Stand Off-Panel	808.00
*	DB8926	Load ¼ W. 50Ω N-Type	15.00
*	DB8929	Helical Preselector A=30-50 MHz, B=66-88 MHz	244.00
81	DB8931	Helical Preselector 148-174 MHz	244.00

ACCESSORIES — RECEIVER MULTICOUPLER (continued)

Page	Model Number①	Description	Price
81	DB8932	Helical Preselector 406-512 MHz	$244.00
*	DB8941B	Amplifier 18.5 dB Gain 30-50 MHz	519.00
81	DB8942	Amplifier 16 dB Gain 406-512 MHz	519.00
156	DB8943A	Amplifier 10 dB Gain 132-172 MHz	519.00
156	DB8943B	Amplifier 23 dB Gain 132-172 MHz	519.00
81,83	DB8944	Amplifier 18.5 dB Gain 1-200 MHz	519.00
81,153	DB8945	Amplifier - 23 dB 400-870 MHz	917.00
81,83	DB8946	Amplifier, 17 dB Gain, 200-400 MHz	519.00
81	DB8950	Power Supply 115 VAC/10 VDC	366.00
81	DB8951	Power Supply 220 VAC/10 VDC	394.00
81,153	DB8952	Power Supply 115 VAC/15 VDC	365.00
81,153	DB8953	Power Supply 220 VAC/15 VDC	394.00
81	DB8954	Voltage Regulator 12-15 VDC/10 VDC	290.00
81,153	DB8955	Power Supply 15 VDC to 15 VDC Crossover Module	255.00
81	DB8956	Power Supply 115 VAC/24 VDC	365.00
153	DB8957	Power Supply 230 VAC/24 VDC	394.00
*	DB8940	Cable Expansion Kit	22.00
*	DB8940W	Cable Expansion Kit, "W" Series	22.00

NEW BASE STATION POWER AMPLIFIERS, POWER SUPPLIES

Page	Model Number①	Description	Price
160	DBP012C01B-G	Low Power, Cellular, 860-900 MHz	$ 900.00
160	DBP012C01B-H	Low Power, Cellular, 915-960 MHz	900.00
162	DBP045C01B-G	High Power, Cellular, 860-900 MHz	1,050.00
162	DBP045C01B-H	High Power, Cellular, 915-960 MHz	1,050.00
159	DBP012D01B-G	Low Power, Dynamic, Cellular, 860-900 MHz	1,200.00
159	DBP012D01B-H	Low Power, Dynamic, Cellular, 915-960 MHz	1,200.00
161	DBP045D01B-G	High Power, Dynamic, Cellular, 860-900 MHz	1,600.00
161	DBP045D01B-H	High Power, Dynamic, Cellular, 915-960 MHz	1,600.00
163	DBP100CA1B-G	High Power, 100 Watt 850-900 MHz, 28V	1,840.00
163	DBP100CA1B-H	High Power, 100 Watt 915-960 MHz, 28V	1,840.00
*	DBP125CA1B-G	High Power, 125 Watt Amplifiers, 850-900 MHz, 28V	$2,040.00
*	DPB125CA1B-H	High Power, 915-960 MHz, 28V	2,040.00
*	DBP150CA1A-G	High Power, 150 Watt Amplifiers, 850-900 MHz, 13.6V	2,195.00
*	DBP150CA1A-H	High Power, 915-960 MHz, 13.6V	2,195.00
*	DBP200CA1B-G	High Power, 200 Watt Amplifiers, 850-900 MHz, 28V	2,850.00
*	DBP200CA1B-H	High Power, 915-960 MHz, 28V	2,850.00

① Specify frequency when ordering.
*Technical Data Available.
**Not available as standard.

STATIC-TO-DYNAMIC MODIFICATIONS

Page	Model Number①	Description	Price
158	DBPSPAU-G	Avantek Amplifier Modification	770.00
158	DBPSPHA-G	Harris Amplifier Modification	770.00
158	DBPSPKO-G	Kokusai Amplifier Modification	770.00
158	DBPMODS-G	Modification Service Contract	81.00

POWER SUPPLIES FOR DBP100 AND DBP125 SERIES

Page	Model Number①	Description	Price
*	DBPSC-28V18	Power Supply, 110 VAC, 28V @ 18A	$ 850.00
*	DBPSD-28V18	Power Supply, 220 VAC, 28V @ 18A	850.00

POWER SUPPLIES FOR DBP150 SERIES

Page	Model Number①	Description	Price
*	DBPSC-13V38	Power Supply, 110 VAC, 13.6V @ 38A	$ 850.00
*	DBPSD-13V38	Power Supply, 220 VAC, 13.6V @ 38A	850.00

POWER SUPPLIES FOR DBP200 SERIES

Page	Model Number①	Description	Price
*	DBPSC-28V36	Power Supply, 110 VAC, 28V @ 36A	$1,285.00
*	DBPSD-28V36	Power Supply, 220 VAC, 28V @ 36A	1,285.00

SENTRY 8000™ REMOTE ANTENNA SYSTEM MONITORS

Page	Model Number	Description	Price
156	DB8843	Complete Monitoring Unit includes: 1) Internal Modem 300, 1200 baud 2) 18 Transmitter Ports 3) 4 Antenna Ports 4) 6 Local Alarm Ports 5) Battery Back-up Port 6) 4 Control Relays	$5,072.00
155	DB8860	Processor, Includes: Eight Digital Inputs, Four Form C Relay Outputs Manual, Wall Transformer and Audio Pass Thru	1,450.00

	DB8860 OPTIONS:			
		FOR	ADD ..	
155 155	DB8869-AD14 DB8869-AD58	**Inputs**-Required for basic operation Analog- maximum of 128 Digital-maximum of 96 Relays-maximum of 80 Audio-maximum of 32	Four Port A/D Card 1 Four Port A/D Card 2 Each Port contains: Four Analog Input Two Digital inputs One Form C Relay output One Relay Driver One pair Balanced Audio Pass inputs	$450.00 450.00
155	DB8869-VDT	**Onsite** two-way communication with a Terminal	RS232 Interface Card	200.00
155	DB8866	**Local** LCD Display for Monitoring and selected data entry (time, date & password)	Portable Keyboard/Display Unit	395.00
155	DB8869-MODEM	**Remote** two-way communication with a Terminal (Wireline only)	Modem Card Baud Rate (300/1200)	985.00
155	DB8869-VOICE	**Remote** two-way communication with a Terminal or Person. (Wireline, DTMF and Voice)	Modem/Voice Synthesis Card with DTMF control Baud Rate (300/1200)	1,150.00
155	DB8869-PACK	**Remote** two-way communication with a Terminal (Radio Link)	Packet Controller Interface Card	195.00
155	DB8862	**Expansion** The I/O capability of the eight port Sentry can be increased to a total of 32 ports by attaching up to three Slave Units	Slave Expansion Unit Interfaces to DB8860 and accommodates one or both Four Port A/D Cards	1,075.00
155	DB8864	**Automatic DC Power** Battery backup and charging	Battery Backup Module	195.00
155	DB8890-WCX	**Interconnection** (Connectors, Cables)	25 pin Connector Kit for easy assembly to Sentry 8860 (excludes cables)	25.00
155	DB8869-M422		Processor to Slave interface card	200.00
155 155	DB8869-SL25 DB8869-SL3		Shielded 25 pin cable (25 feet) Shielded 25 pin cable (3 feet) For RS422 communication with main Sentry processor	150.00 90.00
155	DB8869-TEMP		Temperature Probe	250.00

NEW HAND-HELD DIGITAL POWER METER②

Page	Model Number	Description	Price
157	DB8120	25-1000 MHz Power Meter, With Cables (Belt Clip)	$ 350.00
157	DB8120M	25-1000 MHz Power Meter, With Cables (Magnet)	350.00

① Please specify frequencies of operation when ordering. Current product availability, frequency of operation and price are determined by the published price list.

② **WITH METER INSTALL SENTRY 8000™ SENSORS ONLY. USE CORRECT MODEL NO. FOR OPERATING FREQUENCIES.**

SENTRY 8000™ RF POWER SENSORS

Page	Model Number	Description	Frequency MHz	Price
		(Rated to 1000 watts)		
157	DB8881A1000	Unidirectional Sensor, N-Female③	450-1000	$139.00
157	DB8883A1000	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A1000	Bidirectional Sensor	450-1000	164.00
157	DB8885A1000	Bidirectional Sensor	66-325	164.00
157	DB8888A1000	Bidirectional Sensor	30-50	164.00
		(Rated to 350 watts)		
157	DB8881A350	Unidirectional Sensor, N-Female③	450-1000	139.00
157	DB8883A350	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A350	Bidirectional Sensor	450-1000	164.00
157	DB8885A350	Bidirectional Sensor	66-325	164.00
157	DB8888A350	Bidirectional Sensor	30-50	164.00
		(Rated to 100 watts)		
157	DB8881A100	Unidirectional Sensor, N-Female③	450-1000	$139.00
157	DB8883A100	Unidirectional Sensor, N-Male④	450-1000	139.00
157	DB8882A100	Bidirectional Sensor	450-1000	164.00

SENTRY 8000™ CABLE ASSEMBLIES, CONNECTOR KITS, JUMPER

*	DB8890-SC-XX	Single Cable Assy Complete with 2 "D" connector pins on one end, 1 phono plug on the opposite end. "XX" denotes the length in feet in 5 ft increments from 5 to 50 feet.⑤	17.50 plus .50 per foot cable
*	DB8890-DC-XX	Dual Cable Assy consists of 2 DB8890-SC-XX assemblies with the ground conductor tied together on the "D" connector end. Required for the Antenna 4 position only.	23.00 plus 1.00 per foot cable
*	DB8890-JUMP	Jumper wire used to ground reflected inputs to Sentry when only forward power is being monitored.	5.00
*	DB8890-WCA	Antenna connector kit. Contains all parts and instructions to connect DB8890-SC-XX or DB8890-DC-XX assy(s) to the Sentry antenna inputs.	18.00
*	DB8890-WCT	Transmitter connector kit. Contains all parts and instructions to connect DB8890-SC-XX assemblies to the Sentry transmitter inputs.	26.00

③ Power to be measured input to female connector of sensor.

④ Power to be measured input to male connector of sensor.

⑤ One required for each parameter being measured. For example, unidirectional sensors require one each, bidirectional sensors require two each.

*Technical Data Available

DECIBEL

MOBILE ANTENNAS

MINIMUM NET ORDER $50.00

30-50 MHz RANGE

30-36 MHz Base Load
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
87	DB712-A01	$59.50
87	DB712-A11	64.00
87	DB712-A06	74.50
87	DB712-A16	80.00
87	DB712-A07	78.00
87	DB712-A17	81.00
87	DB712-A02	59.50
87	DB712-A12	64.00
87	DB712-A00 ①	53.00
87	DB712-A10 ①	56.00

36-42 MHz Base Load
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
87	DB712-B01	$59.50
87	DB712-B11	64.00
87	DB712-B06	74.50
87	DB712-B16	80.00
87	DB712-B07	78.00
87	DB712-B17	81.00
87	DB712-B02	59.50
87	DB712-B12	64.00
87	DB712-B00 ①	53.00
87	DB712-B10 ①	56.00

42-50 MHz Base Load
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
87	DB712-C01	$59.50
87	DB712-C11	64.00
87	DB712-C06	74.50
87	DB712-C16	80.00
87	DB712-C07	78.00
87	DB712-C17	81.00
87	DB712-C02	59.50
87	DB712-C12	64.00
87	DB712-C00①	53.00
87	DB712-C10①	56.00

66-88 MHz RANGE

66-88 MHz Unity Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
88	DB718-D11	$40.50
88	DB718-D16	52.25
88	DB718-D17	61.50
88	DB718-D10①	34.00

132-512 MHz RANGE

132-512 MHz Unity Gain Antenna
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
•	DB-675-T01	$26.00
•	DB-675-T06	36.50
•	DB-675-T07	40.50
•	DB-675-T02	26.00
•	DB-675-T00①	10.50

132-512 MHz Unity Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
89	DB710-T01	$27.00
89	DB710-T06	36.25
89	DB710-T07	47.25
89	DB710-T00①	10.50

135-512 MHz Broad Band Unity Gain
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
89	DB700-T11	$35.00
89	DB700-T10①	16.50

①**(DBxxx-xxx) - Replacement Antenna Only** (No mounting hardware, cable or connector)

132-174 MHz RANGE

132-174 MHz 2.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
90	DB720-E01	$50.00
90	DB720-E11	56.50
90	DB720-E06	64.00
90	DB720-E16	66.00
90	DB720-E07	67.00
90	DB720-E17	73.50
90	DB720-E00 ①	30.50
90	DB720-E10 ①	33.50

132-174 MHz 2.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
91	DB702-E01	$60.00
91	DB702-E11	66.00
91	DB702-E06	69.50
91	DB702-E16	76.00
91	DB702-E07	75.00
91	DB702-E17	78.25
91	DB702-E02	60.00
91	DB702-E12	66.00
91	DB702-E00 ①	44.00
91	DB702-E10 ①	48.00

406-420 MHz RANGE

406-420 MHz 5.0dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
92	DB705-G11	$56.00
92	DB705-G16	65.00
92	DB705-G17	75.00
92	DB705-G12	56.00
92	DB705-G10①	44.00

406-420 MHz 5.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
93	DB730-G01	$51.00
93	DB730-G11	57.25
93	DB730-G06	62.50
93	DB730-G16	66.00
93	DB730-G07	67.75
93	DB730-G17	71.00
93	DB730-G00①	32.00
93	DB730-G10①	35.50

450-470 MHz RANGE

450-470 MHz 5.0dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **CLASSIC**

Page No.	Model No.	Price
92	DB705-H11	$56.00
92	DB705-H16	65.00
92	DB705-H17	75.00
92	DB705-H12	56.00
92	DB705-H10①	44.00

450-470 MHz 5.5dB Gain Antennas
Complete with 15′ RG 58/U Cable and PL-259 Connector — **DECISION**

Page No.	Model No.	Price
93	DB730-H01	$51.00
93	DB730-H11	57.25
93	DB730-H06	62.50
93	DB730-H16	66.00
93	DB730-H07	67.75
93	DB730-H17	72.00
93	DB730-H00①	32.00
93	DB730-H10①	35.50

Effective June 1, 1988

DECIBEL MOBILE ANTENNAS

MINIMUM NET ORDER $50.00

470-488 MHz RANGE

Page No.	Model No.	Price
470-488 MHz 5.0dB Gain Antenna Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
92	DB705-J11	$56 00
92	DB705-J16	65.00
92	DB705-J17	75.00
92	DB705-J12	56.00
92	DB705-J10 ①	44.00
470-488 MHz 5.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
93	DB730-J01	$51.00
93	DB730-J11	57.25
93	DB730-J06	62.50
93	DB730-J16	66.00
93	DB730-J07	67.75
93	DB730-J17	72.00
93	DB730-J00 ①	32.00
93	DB730-J10 ①	35.50

488-512 MHz RANGE

Page No.	Model No.	Price
488-512 MHz 5.0dB Gain Antenna Complete with 15′ RG 58/U Cable and PL-259 Connector		**CLASSIC**
92	DB705-K11	$56.00
92	DB705-K16	65.00
92	DB705-K17	75.00
92	DB705-K12	56.00
92	DB705-K10 ①	43.60
488-512 MHz 5.5dB Gain Antennas Complete with 15′ RG 58/U Cable and PL-259 Connector		**DECISION**
93	DB730-K01	$51.00
93	DB730-K11	57.25
93	DB730-K06	62.50
93	DB730-K16	66.00
93	DB730-K07	67.75
93	DB730-K17	72.00
93	DB730-K00 ①	32.00
93	DB730-K10 ①	35.50

406-870 MHz RANGE

Page No.	Model No.	Description		Price
406-870 MHz SPECIAL PURPOSE ANTENNA (No Ground Plane Required) Complete with 15′ Low-Loss Cable and Connector				
94	DB708-G20	Hardhat™	406-420	$78.75
94	DB708-H20	Hardhat™	450-470	78.75
94	DB708-J20	Hardhat™	470-488	78.75
94	DB708-K20	Hardhat™	488-512	78.75
102	DB726-L20N	Teardrop™	806-870	79.80

806-870 MHz SELECTION

806-870 MHz Classic™ Antennas 3.0dB Gain
Complete with 15′ AA 3096 Cable and Choice of Connectors

	DB725-L11N	Classic	806-870	$61 50
	DB725-L11U	Classic	806-870	56 50
	DB725-L10 ①	Classic	806-870	36.75

① **(DBxxx-xxx) - Replacement Antenna Only** (No mounting hardware, cable or connector)
② **Replacement Antenna with cable only.**

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806-960 MHz SELECTION

Page No.	Model No.	Mount	Frequency Range	Price
806-960 MHz Lo-Pro™ and Button™ Antennas Complete with 15′ RG 18/U Cable and Choice of Connector				
99	DB732-P01N	Lo-Pro™	806-960	$43.00
99	DB732-P01NC	Lo-Pro™	806-960	40 50
99	DB732-P01TC	Lo-Pro™	806-960	40 50
99	DB750-P01N	Lo-Pro™	806-960	36.25
99	DB750-P01NC	Lo-Pro™	806-960	33 00
99	DB750-P01TC	Lo-Pro™	806-960	33.00
99	DB750-P01U	Lo-Pro™	806-960	36.25
98	DB740-P01N	Button™	806-960	32.00
98	DB740-P01NC	Button™	806-960	29 25
98	DB740-P01TC	Button™	806-960	29 25
98	DB740-P01U	Button™	806-960	32 00
98	DB741-P01N	Button™	806-960	39.00
98	DB741-P01NC	Button™	806-960	36 00
98	DB741-P01TC	Button™	806-960	36.00
98	DB741-P01U	Button™	806-960	36 00
98	DB741-P01UC	Button™	806-960	36.00
98	DB741B-P01N	SILHOUETTE™	806-960	$ 41.50
98	DB741B-P01NC	SILHOUETTE™	806-960	41.50
98	DB741B-P01TC	SILHOUETTE™	806-960	41.50
98	DB741B-P01U	SILHOUETTE™	806-960	41.50
98	DB741B-P01UC	SILHOUETTE™	806-960	41.50
98	DB741BG-P01N	Black-Gold	806-960	115 00
98	DB741BG-P01NC	Black-Gold	806-960	115.00
98	DB741BG-P01TC	Black-Gold	806-960	115.00
98	DB741BG-P01MU	Black-Gold	806-960	115 00
98	DB741BG-P01UC	Black-Gold	806-960	115.00
806-960 MHz Chrome 3.0dB Gain No-Hole Mount Elevated Feed Antenna Complete with 15′ RG 58/U Cable and Choice of Connectors Factory Installed				
100	DB737-P09N	Trunk Lip Elevated Feed	806-960	$66.25
100	DB737-P09NC	Trunk Lip Elevated Feed	806-960	66 25
100	DB737-P09TC	Trunk Lip Elevated Feed	806-960	66 25
100	DB737-P09U	Trunk Lip Elevated Feed	806-960	66 25
100	DB737-P09MUC	Trunk Lip Elevated Feed	806-960	66 25
100	DB737-P00 ②	Trunk Lip Elevated Feed	806-960	61.00
806-960 MHz 3.0dB Gain Silhouette™ Antennas, Black Versions of Cellular Antennas Complete with 15′ RG 58/U Cable and Choice of Connectors Factory Installed				
100	DB737B-P09N	SILHOUETTE™	806-960	$ 72 00
100	DB737B-P09NC	SILHOUETTE™	806-960	72.00
100	DB737B-P09TC	SILHOUETTE™	806-960	72 00
100	DB737B-P09U	SILHOUETTE™	806-960	72 00
100	DB737B-P09MUC	SILHOUETTE™	806-960	72 00
100	DB737B-P00 ②	SILHOUETTE™	806-960	66 50
100	DB737BG-P09N	Black-Gold	806-960	145.00
100	DB737BG-P09NC	Black-Gold	806-960	145 00
100	DB737BG-P09TC	Black-Gold	806-960	145.00
100	DB737BG-P09MU	Black-Gold	806-960	145.00
806-960 MHz Chrome 3.0dB Gain 1″ Hole Mount Elevated Antenna Complete with 15′ RG 58/U Cable and Choice of Connectors				
99	DB738-P19N	Elevated Feed Hole Mount	806-890	$112.50
99	DB738-P19NC	Elevated Feed Hole Mount	806-890	109.25
99	DB738-P19TC	Elevated Feed Hole Mount	806-890	109.25
99	DB738-N19N	Elevated Feed Hole Mount	806-890	112.50
99	DB738-N19NC	Elevated Feed Hole Mount	890-960	109.25
99	DB738-N19TC	Elevated Feed Hole Mount	890-960	109.25
821-890 and 890-960 MHz Chrome 3.0dB Gain Mag-28™ Antenna for Temporary use with transportables Complete with 10′ RG 58/U and TNC Crimp Connector				
102	DB739-M07TC	MAG-28™	821-890	$44.00
102	DB739-N07TC	MAG-28™	890-960	44.00
NEW 824-960 MHz Black and Black Gold™ 3.0dB Gain DBglas™ Antennas Complete with 15′ RG 58/U Cable and Choice of Connectors (Not Installed)				
101	DB749B-M36TC	DBglas™	824-894	$ 59.75
101	DB749B-M36MUC	DBglas™	824-894	59.75
101	DB749BG-M36TC	Black-Gold	824-894	135.00
101	DB749BG-M36MU	Black-Gold	824-894	135.00
101	DB749B-N36TC	DBglas™	890-960	59.75

DECIBEL MOBILE ANTENNAS

MINIMUM NET ORDER $50.00

ACCESSORIES — Classic Series

Whips

Page No.	Model No.	Description	Price
104	11450	DB702, 712, 670, .100 Dia.	$17.50
104	11453	DB728	17.50
104	11455	DB705-G	27.00
104	11460	DB705-H	27.00
104	11461	DB705-J	27.00
104	11462	DB705-K	27.00
104	11470	DB725-L	25.00
104	11434	DB702, 712, .125 Dia.	10.50

Coils and Springs*

Page No.	Model No.	Description	Price
104	11457	DB702-E0 Series	$27.00
104	11458	DB702-E1 Series	30.00
104	11500	DB712-A1 Series	28.00
104	11501	DB712-B1 Series	28.00
104	11502	DB712-C1 Series	28.00
104	11512	DB712-A0 Series	31.00
104	11513	DB712-B0 Series	31.00
104	11514	DB712-C0 Series	31.00
104	*11419	DB712	10.50
104	*11463	DB705-G, H, J, K Series	12.00
104	*11469	DB725-L Series	12.00

Complete Mounts

Page No.	Model No.	Description	Price
103	11485	¾″ Roof 30-36 MHz	$13.50
103	11486	¾″ Roof 36-42 MHz	13.50
103	11487	¾″ Roof 42-50 MHz	13.50
103	11488	¾″ Roof 50-900 MHz	13.50
103	11490	Trunk Lid 30-36 MHz	26.00
103	11491	Trunk Lid 36-42 MHz	26.00
103	11492	Trunk Lid 42-50 MHz	26.00
103	11493	Trunk Lid 50-900 MHz	28.00
103	11494	Magnet 30-36 MHz	41.50
103	11495	Magnet 36-42 MHz	41.50
103	11496	Magnet 42-50 MHz	41.50
103	11497	Magnet 50-900 MHz	41.50

Mounting Hardware

Page No.	Model No.	Description	Price
103	11474	Chrome Dome™ 30-36 MHz	$ 8.50
103	11475	Chrome Dome™ 36-42 MHz	8.50
103	11476	Chrome Dome™ 42-50 MHz	8.50
103	11477	Chrome Dome™ 132-900 MHz	8.00
103	11465	¾″ Hole Mount 30-900 MHz	5.25
103	11466	⅜″ Snap In 30-512 MHz	10.50
104	11515	DB 675 Series Whip Nut	5.00
104	11416	DB702, 712 Series Whip Nut	5.25
103	11417	"O" Ring and Gasket Kit	8.00

Mount Accessories

Page No.	Model No.	Description	Price
103	11483	Adapter to Low Profile (Wht)	$ 8.50
103	11484	Adapter to Low Profile (Blk)	8.50
103	11498	Adapter to Low Profile (Chrome)	12.00
103	11522	Set Screw Assortment	4.50
103	11521	12 Hole Plugs	4.50
103	11523	Trunk Groove Mount	7.50

Accessories — Button™ Series

Page No.	Model No.	Description	Price
103	11526	Mount, Chrome, less cable and connector For DB740, DB741, 1 ea.	$ 6.00
104	11550	Mount, Chrome, with cable For DB740, DB741, 1 ea.	19.00
104	11558	Mount, Black, with cable For DB740, DB741, 1 ea.	22.00

Accessories — Connectors

Page No.	Model No.	Description	Price
104	11539	Connectors, N male For AA 3096, 25 pk.	$198.50
104	11562	Connectors, TNC crimp-on For RG 58/U, 25 pk.	178.50
104	11556	Connectors, Mini-UHF male crimp-on For RG 58/U, 25 pk.	65.00
173	11312	Connectors, N male solder For RG 58/U and RG 142, 4 pk.	19.00

ACCESSORIES — Decision Series

Whips

Page No.	Model No.	Description	Price
103	11400	DB 675, 710, 750	$ 4.25
103	11430	DB760-E, 720-E Series	10.50
104	11440	DB730-G Series	$18.50
104	11441	DB730-H Series	18.50
104	11442	DB730-J Series	18.50
104	11443	DB730-K Series	17.50
103	11540	DB700 Series	5.25

Coils and Springs*

Page No.	Model No.	Description	Price
104	11436	DB720-E Series	$15.50
104	11444	DB730-G Series	15.50
104	11445	DB730-H, J, K Series	15.50
104	*11419	DB718, 720, 730	$10.50

Complete Mounts (Lo-Pro™)

Page No.	Model No.	Description	Price
103	11409	Roof Mount 50-512 MHz	$21.00
103	11412	Magnet 50-512 MHz	41.50
103	11415	Trunk Lid 50-512 MHz	30.00

Mounting Hardware

Page No.	Model No.	Description	Price
104	11401	Whip Nut 720, 730	$ 5.25
104	11402	Whip Nut 710, 750 Series	5.25
103	11403	Base Nut	5.25
103	11404	"0" Ring Kit	5.00
103	11407	Based Stud Assy.	6.50
103	11408	Base Stud with Cable	20.50
103	11413	Trunk Lid Less Cable	15.00

ACCESSORIES — Whips and Adaptors

Page No.	Model No.	Description	Price
104	11532	Whip and adaptor, Chrome, For DB732, DB741, 3dB, 1 ea.	$ 15.00
104	11535	Whip and adaptor, Chrome, For DB750, DB740, ¼ wave, 25 pk.	132.50
104	11557	Whip and adaptor, Black, For DB741, 1 ea.	18.00
104	11563	Whip and adaptor, Black, For DB737B, 1 ea.	18.00
104	11566	Whip and adaptor, Black, For DB749B (824-894), 1 ea.	11.40
104	11570	Whip and adaptor, Black, For DB749B (890-960), 1 ea.	11.40
104	11560	Whip and adaptor, Gold, For DB737BG, 1 ea.	79.00
104	11561	Whip and adaptor, Gold, For DB741BG, 1 ea.	79.00
104	11571	Whip and adaptor, Gold, For DB749BG, 1 ea.	60.00

Accessories — Whips

Page No.	Model No.	Description	Price
104	11552	Whip, Chrome, For DB728, DB732, DB741, 3db, 1 ea.	$10.00
104	11553	Whip, Chrome, For DB737, DB738, 3db, 1 ea.	10.00
104	11554	Whip, Chrome, For DB738N, 3db, 1 ea.	10.00
104	11555	Whip Nut, Chrome, For DB732, DB737, DB738, DB741, 1 ea.	6.00

Accessories — DBglas™ Couplings

Page No.	Model No.	Description	Price
104	11567	Exterior Coupling unit For DB749, 1 ea.	$12.80
104	11568	Interior Coupling unit For DB749, 1 ea.	35.80
104	11572	Exterior Coupling unit for DB749BG (Gold), 1 ea.	50.00
104	11569	Reinstall Kit for DB749B	3.90

Accessories — Brackets

Page No.	Model No.	Description	Price
103	11548	⅜″ Hole Black Silhoutte™ no hole bracket For DB737, DB737B 1 ea.	$ 9.50
103	11549	¾″ Hole Black Silhoutte™ no hole bracket For DB737, DB737B 1 ea.	10.50

NOTES

TERMS AND CONDITIONS OF SALE

PRICES:
All prices shown on price list are F.O.B factory, Dallas, Texas and include domestic packing. Terms are Net 30 days from date of shipment. Prices shown do not include any federal, state or local taxes. Export packing, if requested, will be at additional charge. **Prices are subject to change without notice.**

CREDIT APPROVAL:
Orders are subject to the approval of the Decibel's Credit Department. If credit is not approved, shipment of the ordered equipment can only be made with terms of Cash in Advance or Cash on Delivery.

ACCEPTANCE OF ORDERS:
Verbal orders are valid only at the prices stated on the most current price list, in effect at the time order is received. An order becomes officially accepted when Acknowledgment is forwarded to customer.

QUOTATIONS:
Quotations are valid for 30 days maximum, unless otherwise extended in writing. Quoted shipping costs are our best estimates only.

DOMESTIC TRANSPORTATION:
Shipments to be billed in accordance with the established prices as published by Numerex (domestic rates). Shipments will be routed by Decibel's best judgment unless carrier specified by Buyer can be utilized. Decibel is not responsible for selecting cheapest or fastest routing.

INTERNATIONAL TRANSPORTATION:
Shipping charges will include surface transportation to forwarder, forwarding charges documentation preparation, insurance and etc., when applicable.

DOMESTIC PACKING:
Packing suitable for Continental U.S. Transportation, surface or air, is used as standard on all Decibel products, Decibel's standard domestic packing on all products is suitable for international air shipment.

SPECIAL OR INTERNATIONAL SURFACE PACKING:
Export and/or special packing are at additional charges and are **estimates only.** Billing, packing only, may differ from these estimates, up to 10%.

DELAYS:
Decibel will not be liable for contractual obligations due to delays in shipments.

MODIFICATIONS:
Decibel reserves the right to modify equipment and change specifications without notice, provided the modification does not materially effect the performance of the equipment.

CLAIMS FOR DAMAGED OR LOST SHIPMENT:
Claims for damaged or lost material while material is in transit must be made immediately by the Buyer against the carrier. UPS shipment claims for damaged or loss of material may be made by Decibel.

CLAIMS FOR SHORTAGES:
Claims for shortages in shipments must be made within 30 days from date of shipment of material from Decibel's plant.

RETURN OF MATERIAL:
No material will be received or accepted by Decibel without written authorization. Decibel will not be responsible for any material returned without Decibel's prior written authorization or for material that is shipped freight collect. If due, credit not exceeding 80% of the original price will be allowed on unused material, provided it is returned prepaid and in new condition. Credit is issued only to the original purchaser and not to subsequent owner.

SPECIALS:
All Non-Standard catalog items are considered SPECIAL and are NON-CANCELLABLE and NON-RETURNABLE.

ABOUT DECIBEL PRODUCTS, INC. WARRANTIES

ALL PRODUCTS' BASIC LIMITED WARRANTY:

Decibel warrants that, at time of shipment, the products furnished by Decibel are free from defects in material and workmanship. The term of this warranty is limited to replacement or repair of such products within one year from the date of delivery to the first user. The defective product has to be returned by the first user to the Decibel factory, freight prepaid independent of where the product was purchased. No products will be accepted for replacement or repair without prior written approval. Replacement or repair (DECIBEL'S OPTION) will be made only after an examination at Decibel's Dallas, Texas plant shows defective material or workmanship at the time of manufacture. THIS WARRANTY IS THE ONLY WARRANTY MADE BY DECIBEL AND IS GIVEN EXPRESSLY AND IN PLACE OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. DECIBEL IS NOT LIABLE FOR ANY OTHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, INSTALLATION COSTS, INCONVENIENCE, RENTAL OF REPLACEMENT EQUIPMENT, LOSS OF PROFITS OR OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF THE PRODUCTS MANUFACTURED BY DECIBEL, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT.

NEW EXTENDED TWO YEAR LIMITED WARRANTY* AND POWER AMPLIFIER LIMITED WARRANTY**

*The new EXTENDED TWO YEAR LIMITED WARRANTY is applicable to certain of Decibel Products' external dipole fixed station antennas. The antennas are:

- DB222 Series
- DB224 Series
- DB228 Series
- DB264 Series
- DB268 Series
- DB304 Series
- DB404 Series
- DB408 Series
- DB411 Series
- DB413 Series
- DB420 Series

For this extended, basic plus one year, warranty to become effective, each antenna must be registered by returning the properly completed card, supplied with the antenna, directly to Decibel Products. The antenna will be replaced on an equal exchange basis including freight prepaid. An invoice will be sent which will be offset by a credit upon receipt and factory examination of the defective antenna. Before Decibel can honor the warranty, upon notification of defective antenna problem, advise if the antenna is registered. For the two year warranty to be effective, proof of date of receipt may be required. Upon verification of the Extended Limited Warranty a Return Authorization will be provided and the replacement order entered. In Canada a return could be sent to our authorized agent or distributor if purchased from them and if prior approval is given by them.

****BASE STATION AMPLIFIERS WARRANTY:**The Decibel basic one year warranty, plus one year from date of shipment from Decibel applies. Modified Static-to-Dynamic amplifiers will have the Decibel basic one year warranty on the modification and a one-year limited warranty can be purchased as an option on the power amplifier.

ILLUSTRATION OF PRE-ADDRESSED, POSTAGE PAID TWO YEAR WARRANTY REGISTRATION CARD

DECIBEL PRODUCTS, INC.
EXTENDED TWO YEAR LIMITED WARRANTY

To validate the two year limited warranty please complete the card and return it to DECIBEL PRODUCTS, INC. within ten days of receipt of the antenna.

NOT VALID OUTSIDE OF U.S.A. & CANADA

D.B. Order No. (or Invoice No.) ______________ RECEIPT OF SHIPMENT DATE ______________

D.B. model no. ______________ Use Frequency ______________ MHz

The antenna is ______________ (side or top) mounted on a ______________ (tower, bldg., etc.) at a height of ______ feet above the ground to the base.

The forward power is ______________ watts, the reflected power is ______________ watts.

Comments ______________

Owner/User: ______________ Installer: ______________

Address: ______________ Address: ______________

Signature: ______________ Signature: ______________

IN THE EVENT A PROBLEM OCCURS IT IS CLEAR THE PURCHASER HAS THE AUTHORITY OF THE OWNER TO OBTAIN A REPLACEMENT

☐ YES ☐ NO (IF NO, THE WARRANTY MAY NOT APPLY.)

"The Measurement of Performance"

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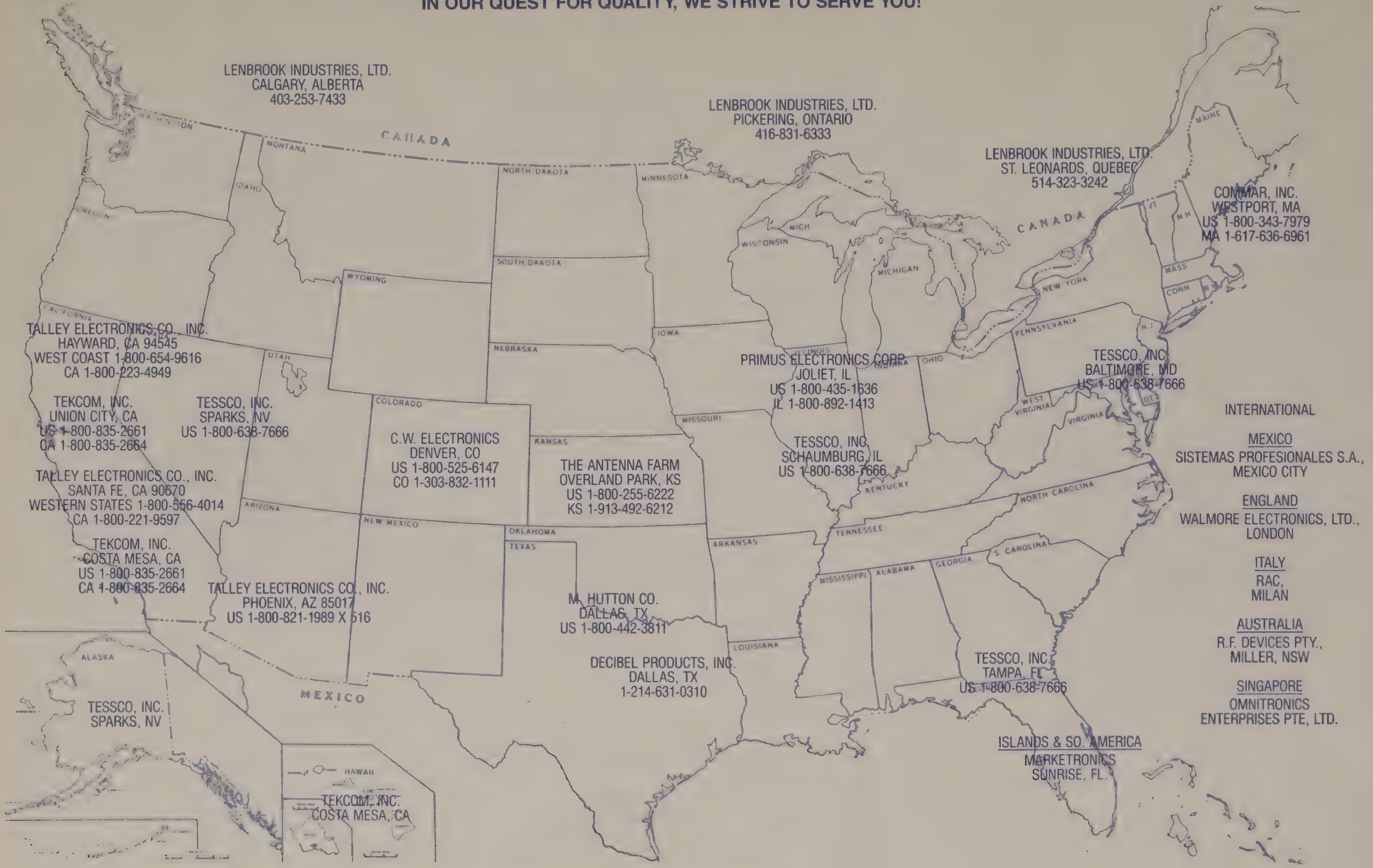
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All weights and measurements are given in English units and followed by metric conversions in parentheses.

Decibel has many products that do not appear in this catalog, such as new products and modifications of products for special applications.

All products are domestic packed, suitable for surface and domestic air carriers. Export surface packing and heavy duty air packing are available on request.

Warranty, terms and conditions are included in Decibel's PRICE LIST, which is published separately and updated on a regular basis.

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Decibel maintains one of the most active antenna/equipment R & D labs in land mobile radio.

Base Station Antennas—the Quest for Quality!

Decibel has been the leading producer of base station antennas for land mobile communications for four decades.

Rugged and Moisture-Proof

Decibel's metal antennas use welded 6061-T6 aluminum alloys of highest strength. Clamps are galvanized steel and V-Bolts are stainless steel. For extra ruggedness, Decibel offers enclosed feeds and fixed dipoles. In additon, some Yagis have gold anodized finishes and radome covers to protect against corrosion and ice build-up.

For moisture proofing, Decibel uses HELIAX® and VAPOR-BLOC® cables and molded harnesses with joints that are electrically, chemically and mechanically joined. VAPOR-WRAP® is offered to cover connectors.

Lightning and static protection is achieved by the aluminum mast's low discharge path to the tower or ground system, plus all elements operate at DC ground.

Selection

Decibel offers an antenna to fulfill almost any land mobile requirement — the right ruggedness, pattern and gain at the right price!

Decibel antennas provide broad bandwidths and up to 17 dB gain. They include omnis and directionals, downtilts and a great selection of Yagis.

Decibel also has a good selection of exclusive Aeroglas™ fiberglass radome antennas with enclosed elements.

Aeroglas was originally used for Olympic vaulter's poles, helicopter rotor blades and racing sailboat masts. Now Decibel has the exclusive use of Aeroglas for radomes. Tests have shown that Aeroglas radomes have exceptional strength plus uniform walls and roundness to resist shock, vibration, winds, temperatures, and saline and caustic environments.

Experience

In the 40 years of experience in base stations antennas, Decibel has learned to produce antennas with consistent electrical and endurance characteristics that give you optimum performance.

If you want quality, you want Decibel base station antennas.

VAPOR-BLOC and VAPOR-WRAP are registered trademarks of Decibel Products, Inc.
HELIAX is a registered trademark of Andrew Corp.

DB201 GROUND PLANE ANTENNA UNITY GAIN, 30-174 and 406-512 MHz

One of Decibel's most popular antennas, the heavy-duty, light-weight DB201 is unity gain, omnidirectional and suitable for mounting atop a tower, pole or building.

It is constructed of metal with all elements operating at DC ground, which makes it almost lightning proof.

Its design provides a new approach to the feeding of the insulated portion of the radiator. The 50-ohm feed-through connector is encapsulated in a moisture and corrosion proof molded epoxy insulator that is tough and durable.

The connecting lead — a male-to-female connection — is protected from the weather but can be replaced if necessary.

Construction

The DB201 operates in the 30-174 MHz and 406-512 MHz ranges, and its radiating element and ground radials are cut to frequency and tested at the factory for minimum VSWR. It is shipped ready to install; only the ground radial rods need to be slipped into place.

If preferred, order the antenna in an "uncut" model and trim it to frequency in the field. A cutting chart is supplied.

Ordering Information

Please specify frequency and termination if non-standard. Uncut models are available for 30-50, 144-174 and 406-512 MHz; when ordering, please specify the frequency band. Mounting Clamps DB365 are included.

144-512 MHz antennas can be shipped by UPS.

DB201 Ground Plane Antenna

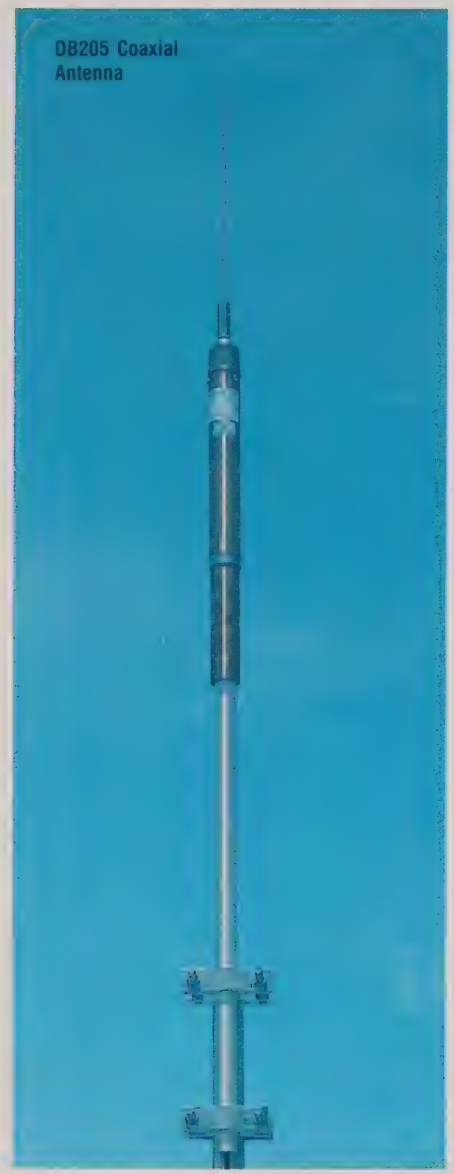
Electrical Data

Frequency Ranges — MHz	30-50, 66-88, 120-150, 150-174, 406-420, 450-512
Bandwidth	2% of frequency
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	Unity
Maximum power input — watts	500
Vertical beamwidth (half power points)	78°
Lightning protection	Direct ground
Standard Termination: Captive Type N male to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

	35 MHz	50 MHz	150 MHz	450 MHz
Materials:				
Radiator (aluminum) — in. (mm)	.875 (22.23) OD with .125 (3.18) wall & .375 (9.35) OD solid rod	.875 (22.23) OD with .125 (3.18) wall & .375 (9.35) OD solid rod	.875 (22.23) OD with .125 (3.18) wall & .375 (9.35) OD solid rod	.875 (22.23) OD with .125 (3.18) wall & .375 (9.35) OD solid rod
Ground rods (aluminum) — in. (mm)	.5 (12.7) OD solid rod tapered to .250 (6.35) OD	.5 (12.7) OD solid rod tapered to .250 (6.35) OD	.5 (12.7) OD solid rod	.5 (12.7) OD solid rod
Support pipe — in. (mm)	1.31 (33.34) OD, 24 (609.6) length	1.31 (33.34) OD, 24 (609.6) length	1.31 (33.34) OD, 24 (609.6) length	1.31 (33.34) OD, 12 (304.8) length
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.1 (.102)	0.8 (.074)	.4 (.037)	.3 (.028)
Wind rating:				
Survival without ice — mph (km/hr)	93 (150)	122 (196)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	51 (82)	65 (105)	over 125 (201)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	45 (20.4)	32 (14.5)	16 (7.25)	11 (5.1)
Overall length — in. (m)	101 (2.57)	78 (1.98)	30 (.76)	19 (.48)
Height (above base plate) — in. (m)	77 (1.96)	54 (1.37)	18 (.45)	6.5 (.17)
Maximum width (horizontal) — in. (m)	216 (5.49)	151 (3.84)	49 (1.24)	15 (.381)
Net weight (w/clamps) — lbs. (kg)	24 (10.89)	22 (9.98)	10 (4.54)	6 (.152)
Shipping weight (w/clamps) — lbs (kg)	33 (14.97)	30 (13.61)	14 (6.35)	9 (.229)

DB205 COAXIAL ANTENNA UNITY GAIN, 33-174 MHz



DB205 Coaxial Antenna

An excellent performer in rugged conditions, the DB205 is a heavy-duty, unity gain omnidirectional antenna for 33-174 MHz.

It mounts to the top of a tower, pole or building and is particularly well suited for oil well drilling and similar situations, because it absorbs severe vibration and withstands rough handling.

Except for 33-50 MHz and 150-174 MHz uncut models, the DB205 is cut to frequency and tested at the factory for minimum VSWR. No adjustment is needed.

Construction

The DB205 is a coaxial half-wave dipole antenna with an upper quarter-wave whip radiator, a center insulator and a lower quarter-wave skirt radiator, which isolates the radiator from the antenna support pipe.

The insulator is molded of tough, durable epoxy and is virtually unbreakable. A feed-through connector and top mounting stud are molded into the insulator, which provides a moisture barrier and simplifies the replacement of the radiator or the feeder cable.

The upper radiating element is made of special spring-tempered stainless steel, and the lower skirt is made of non-corroding brass. All connections are resistant to moisture and galvanic action.

Ordering Information

Please specify exact frequency (and termination if non-standard). DB365 Mounting Clamps are supplied to fit round tower members from 1.25″ (31.75 mm) to 3″ (76.2 mm) OD and angle members up to 2.5″ (63.5 mm). Other size clamps are available by special order.

Electrical Data

Frequency Ranges — MHz	33-50, 66-88, 120-150, 150-174
Bandwidth	2% of frequency
VSWR	2 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	Unity
Maximum power input — watts	500
Vertical beamwidth (half power points)	78°
Standard termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

	35 MHz Range	50 MHz Range	75 MHz Range	160 MHz Range
Materials:				
Whip radiator	17-7 PH stainless steel rod	17-7 PH stainless steel rod	17-7 PH stainless steel rod	17-7 PH stainless steel rod
Whip insulator	Molded epoxy	Molded epoxy	Molded epoxy	Molded epoxy
Skirt — in. (mm)	Brass, 2 (50.8) diameter	Brass, 2 (50.8) diameter	Brass, 2 (50.8) diameter	Brass, 2 (50.8) diameter
Support pipe — in. (mm)	Galvanized steel, 1 (25.4) dia., 24 (609.6) or more available for mounting	Galvanized steel, 1 (25.4) dia., 24 (609.6) or more available for mounting	Aluminum, 1 (25.4) dia., 24 (609.6) or more available for mounting	Aluminum, 1 (25.4) dia., 24 (609.6) or more available for mounting
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.2 (.11)	1.0 (.09)	0.7 (.07)	.3 (.03)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	50 (22.68)	43 (19.50)	29 (13.15)	13 (5.90)
Bending moment, 12′ (3.66 m) below skirt, at 100 mph (161 km/hr) — ft. lbs. (kg m)	188 (26.02)	135 (18.68)	50 (6.92)	19 (2.63)
Wind rating:				
Survival without ice — mph (km/hr)	over 110 (177)	over 125 (201)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice* — mph (km/hr)	110 (177)	over 125 (201)	over 125 (201)	over 125 (201)
Overall length — in. (mm)	217 (5511.8)	206 (5232.4)	119 (3022.6)	71 (1803.4)
Net weight (w/clamps) — lbs. (kg)	38 (17.24)	36 (16.33)	27 (12.25)	19 (8.62)
Shipping weight (w/clamps) — lbs. (kg)	52 (23.59)	50 (22.68)	35 (15.88)	26 (11.79)

*Assumes ice will not accumulate on the flexible whip.

DB212 SIDE MOUNT ANTENNA
UP TO 12.1 dB GAIN, 33-88 MHz

When mounted on the side of a tower, DB212 center-fed antennas provide the optimum in gain, tower utilization, lightning protection and precipitation static reduction.

Decibel offers several models with one, two, three, four or six elements, indicated by the suffix numeral at the end of the model number. For example, the DB212-2 has two elements. Up to 12.1 dB gain can be achieved by model selection, tower height and size, and mounting techniques.

DB212 antennas must be mounted on, and work against, a metal tower leg or pipe that is parallel to and slightly longer than each folded radiator.

Radiation Patterns

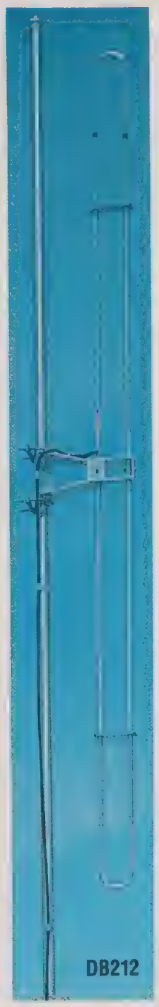
An offset radiation pattern will result when all elements are mounted collinearly on one leg of a triangular or square tower. Maximum gain is in the same direction the elements face. The size of the tower has little effect on the forward gain, but gain to the backside decreases as the tower size increases.

A circular radiation pattern can be created with maximum gain by mounting the DB212 on normal sized towers, 18″ to 35″ (457.2 to 889.0 mm) across the face. With good planning, larger towers can also be used; however, gain will be reduced. (See table).

Side mounted antennas have fewer problems with lightning and precipitation static than do top mounted antennas. Additional protection from static is available by ordering the antenna wrapped with electrical grade poly tape. Since the antenna is all-metal with the elements operating at DC ground, the DB212 is virtually immune to lightning damage.

Ordering Information

Please specify model DB212-1, DB212-2, DB212-3, DB212-4 or DB212-6. Mounting clamps and interconnecting cables for tower faces up to 5′ (1.52 m) are included. Longer mounting clamps and larger cables are available for larger towers.



Continued

Minimum Tower Height Recommendations

	Frequency (MHz)	DB212-2	DB212-3	DB212-4	DB212-6
Vertical span on tower (approx.) — ft. (m)	35	40 (12.19)	67 (20.42)	86 (26.21)	134 (40.84)
	50	31 (9.45)	51 (15.54)	69 (21.03)	106 (32.30)
Maximum exposed area — ft^2 (m^2)	35	2.9 (.27)	4.4 (.41)	5.8 (.54)	8.7 (.81)
	50	1.9 (.18)	2.8 (.26)	3.8 (.35)	5.7 (.53)
Wind load at 100 mph (161 km) — lbs. (kg)	35	116 (52.62)	176 (49.83)	232 (105.23)	348 (174.18)
	50	76 (34.47)	112 (50.80)	152 (69.94)	228 (103.42)
Minimum recommended tower height — ft. (m)	35	110 (35.53)	130 (38.62)	260 (79.25)	400 (121.92)
	50	80 (24.28)	105 (32)	190 (57.21)	295 (89.92)
Net weight — lbs. (kg)	35	31 (14.06)	65 (29.48)	74 (33.52)	130 (58.97)
	50	27 (12.25)	43 (19.5)	60 (27.22)	86 (39.04)
Shipping weight — lbs. (kg)	35	47 (21.32)	89 (40.37)	106 (48.08)	178 (80.74)
	50	35 (15.88)	70 (31.75)	76 (34.47)	140 (63.50)

Note: The usable height of a tower includes the height of the site above the average terrain at the base of the tower.

Gain (at 40 MHz) for Offset Patterns on Larger Towers

Tower Size	DB212-2	DB212-3	DB212-4	DB212-6
4′ (1.22 m) Face				
0° gain — dB	7.6	9.1	10.6	12.1
90°/270° gain — dB	3.7	5.2	6.7	8.2
180° gain — dB	–3.5	–2.0	–0.5	1.0
6′ (1.83 m) Face				
0° gain — dB	7.3	8.8	10.4	11.9
90°/270° gain — dB	3.5	5.0	7.0	8.5
180° gain — dB	–5.0	–3.5	–2.0	–0.5
8′ (2.44 m) Face				
0° gain — dB	7.2	8.7	10.3	11.8
90°/270° gain — dB	3.3	4.9	6.5	7.0
180° gain — dB	–7.0	–5.5	–4.0	–2.5

Note: 0° is the direction from the center of the tower through the antenna elements.

Circularity — Gain (at 40 MHz) for Offset Patterns on Larger Towers

Tower Size	DB212-2	DB212-3	DB212-4	DB212-6
2′ (.61 m) Face				
Average gain — dB	+2.8	+4.7	+6.0	+7.7
Circularity — dB	±0.7	±0.3	±0.7	±0.3
4′ (1.32 m) Face				
Average gain — dB	+2.0	+4.0	+4.8	+6.9
Circularity — dB	±1.3	±0.6	±1.3	±0.6
6′ (1.83 m) Face				
Average gain — dB	+1.6	+3.0	+4.2	+6.3
Circularity — dB	±2.0	±1.1	±2.0	±1.1
8′ (2.44 m) Face				
Average gain — dB	+0.7	+2.2	+3.2	+4.7
Circularity — dB	±3.5	±2.0	±3.5	±2.0

Note: Circularity is the amount above or below average.

Electrical Data

Frequency Range — MHz	33-88
Bandwidth	2% of frequency
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	See patterns
Maximum power input — watts	500
Lightning protection	Direct ground

Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.

Mechanical Data

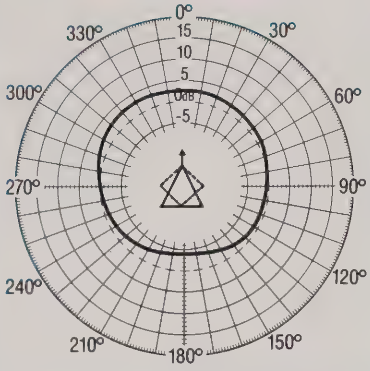
Materials:	
Radiating elements — in. (mm)	Aluminum .75 (19.1) dia. with .875 (22.3) dia. socket
Mounting bracket	Cast aluminum
Mounting straps	Stainless steel
Wind rating:	
Survival w/o ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	80 (129)

Mounting: Stainless steel banding straps are supplied with the antenna and fit round tower members up to 3″ (76.2 mm) OD and angle members up to 2.50″ (63.5 mm) on a side. Other size straps can be supplied on special order.

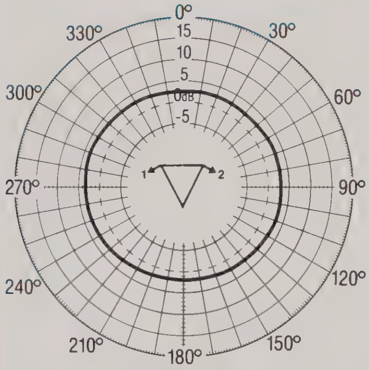
DB212 SIDE MOUNT ANTENNA (CONTINUED) 33-88 MHz

DECIBEL

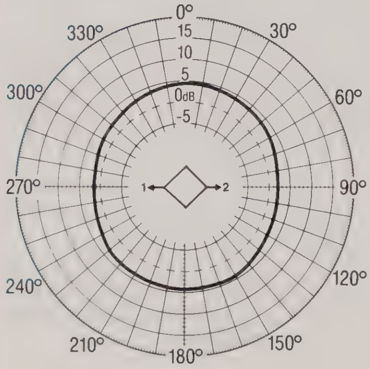
DB212-1 (1 Element)



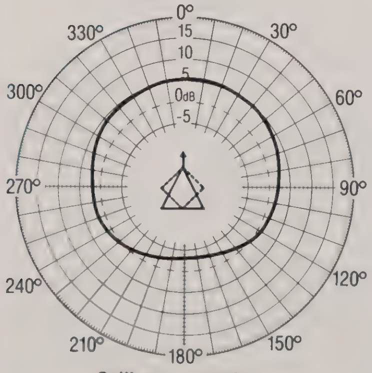
DB212-2 (2 elements)



Triangular tower

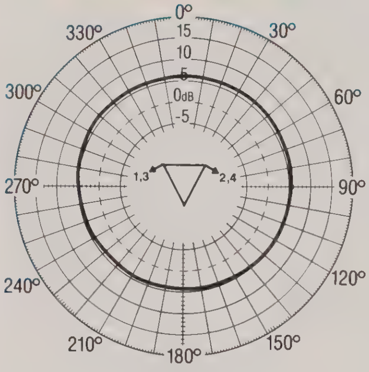


Square tower

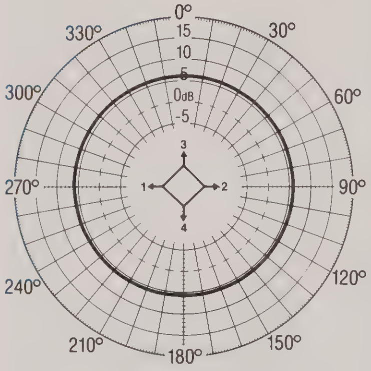


Collinear mounting

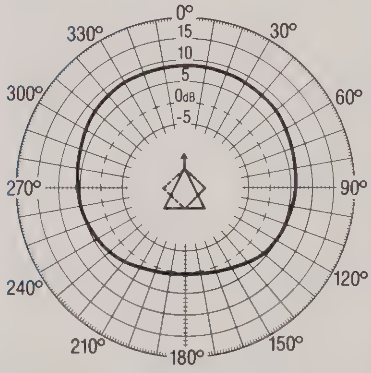
DB212-4 (4 Elements)



Triangular tower



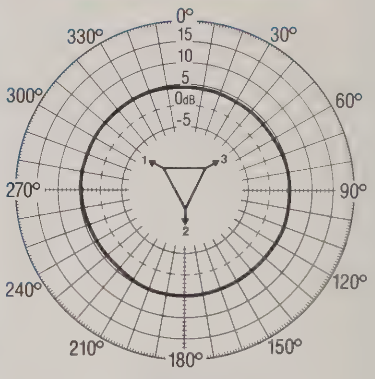
Square tower



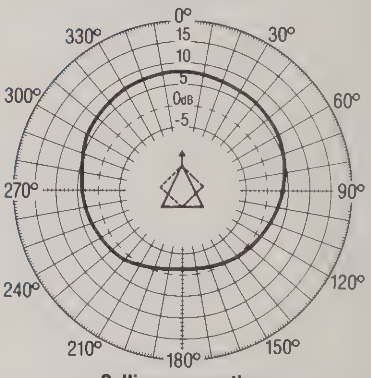
Collinear mounting

The graphs show the radiation patterns, in dB referenced to a vertical half-wave dipole, for several models of the DB212 antennas when mounted on triangular and square 18-24 inch (457-610 mm) towers as measured across the face of the tower.

DB212-3 (3 Elements)

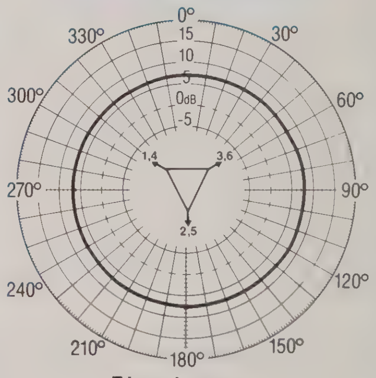


Triangular tower

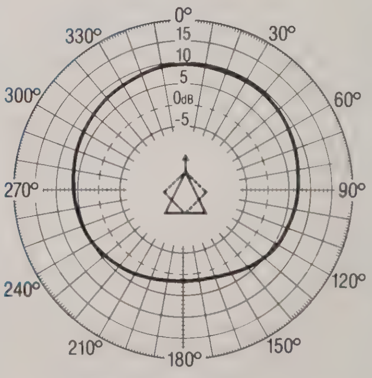


Collinear mounting

DB212-6 (6 Elements)



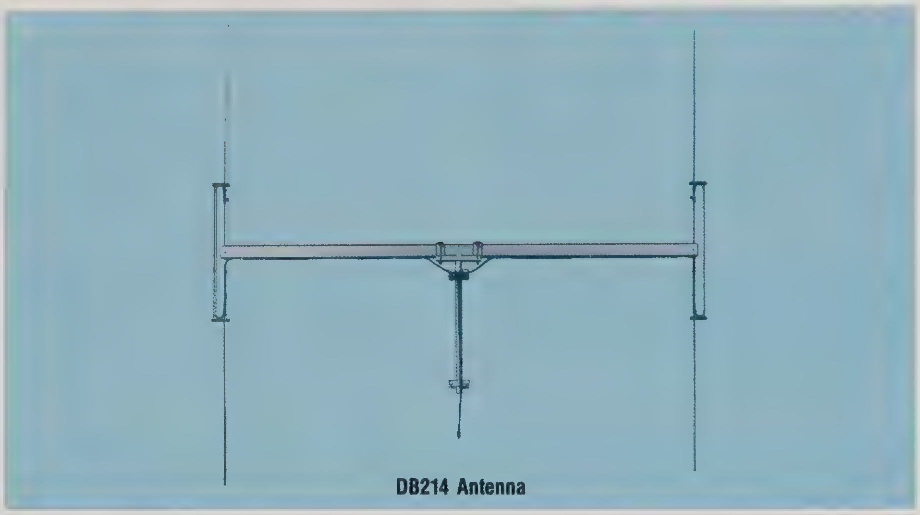
Triangular tower



Collinear mounting

DB214 BIDIRECTIONAL STATION ANTENNA
3.6 dB GAIN, 30-174 MHz

DECIBEL


DB214 Antenna

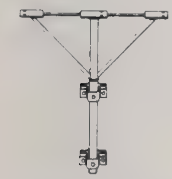
The long, narrow pattern of the DB214 makes it highly suitable for pipelines, highways, railroads and other right-of-way operations.

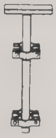
It consists of two vertical half-wave radiators spaced one half wavelength apart and fed in phase through a cable transformer. When top mounted, the antenna provides a horizontal pattern, figure-eight shaped, with the main lobes at right angles to a plane passing through the radiators. VAPOR-BLOC® cabling, a Decibel exclusive, is moisture resistant.

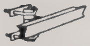
Each antenna is cut to specified frequency, assembled and adjusted at the factory for minimum VSWR.

When mounted atop a wood pole or tower with a 24″ (609.6 mm) face or less, the DB214 provides the horizontal pattern shown by the solid line in the pattern diagram, with nulls of –19 dB. If desired, these nulls can be reduced to the dashed line by the use of a length of pipe extended up through the center of the antenna.

If the pipe is extended above the radiators, it gives additional lightning protection.


30-40 MHz Y-mount


40-88 MHz T-mount

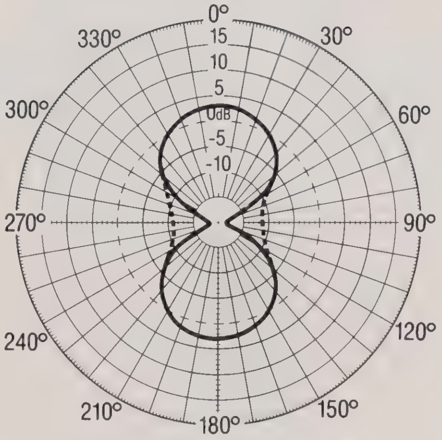

120-174 MHz Angle mount

Ordering Information

Specify frequency (and termination if non-standard). Order DB214 with 3 dB bi-directional gain, DB214-2 with 2-stack array and 6 dB bi-directional gain, or DB214-4 with 4-stack array and 8.4 dB bi-directional gain. Patterns are available.

An orientation bracket and mounting clamps are included to fit round tower members from 1.25″ to 3 ″ (31.75 to 76.2 mm) OD, angle members up to 2″ (50.8 mm). Other clamps can be special ordered.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.



Horizontal radiation pattern of DB214.

Electrical Data	
Frequency Ranges — MHz	30-50, 66-88, 120-150, 150-174
Bandwidth — MHz	
At 35 MHz	2.8
At 50 MHz	4.0
At 74 MHz	6.0
At 160 MHz	12.0
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Maximum gain (over half-wave dipole) — dB	3.6
Maximum power input — watts	500
Horizontal beamwidth (half power points)	60°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

	35 MHz	50 MHz	74 MHz	160 MHz
Materials:				
Cross boom (aluminum) — in. (mm)	2×3 (50.8 × 76.2) with .125 (3.18) wall	2×3 (50.8 × 76.2) with .125 (3.18) wall	2×2 (50.8 × 50.8) with .125 (3.18) wall	1.5×2 (38.1 × 50.8) with .078 (1.98) wall
Elements - two (aluminum) — in. (mm)	.75 (19.05) dia. with .875 (22.23) and 1 (25.4) dia. sockets	.75 (19.05) dia. with .875 (22.23) and 1 (25.4) dia. sockets	.75 (19.05) dia. with .875 (22.23) dia. sockets	.75 (19.05) dia. with .875 (22.23) dia. sockets
Bracket	Y-mount type, gal. steel, 2 (50.8) OD	T-mount type, gal. steel, 2 (50.8) OD	T-mount type, gal. steel, 2 (50.8) OD	Aluminum angle welded to cross boom
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	Stainless steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	5.9 (.548)	4.0 (.372)	3.0 (.279)	1.0 (.093)
Wind rating				
Survival without ice — mph (km/hr)	100 (161)	over 125 (201)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	75 (121)	110 (177)	over 125 (201)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	243 (110.22)	159 (72.12)	120 (54.43)	40 (18.14)
Height (vertical) — ft. (m)	13.7 (4.18)	9.6 (2.93)	6.5 (1.98)	3.0 (.91)
Width (horizontal) — ft. (m)	14.6 (4.45)	10.5 (3.2)	7.3 (2.23)	3.7 (1.13)
Net weight (w/clamps, brackets) — lbs. (kg)	76 (34.47)	46 (20.87)	26 (11.79)	11 (4.99)
Shipping weight (w/clamps, brackets) — lbs. (kg)	142 (64.41)	78 (35.38)	37 (16.78)	26 (11.79)

DB222 BROAD BAND ANTENNA
3 or 6 dB GAIN, 120-174 MHz

DECIBEL

The DB222 is a rugged, lightweight antenna that provides a low VSWR and maximum gain over a wide range of frequencies in the 120-174 MHz bands.

It can be mounted on the top or side of a tower and arrayed to give a circular or offset horizontal pattern. Its broad band response permits it to perform efficiently on both transmit and receive frequencies.

The construction of the antenna assures superior lightning protection. The radiators operated at DC ground, and the aluminum mast with its pointed top cap provides a positive low resistance discharge path to the tower or ground system.

Radiation Patterns

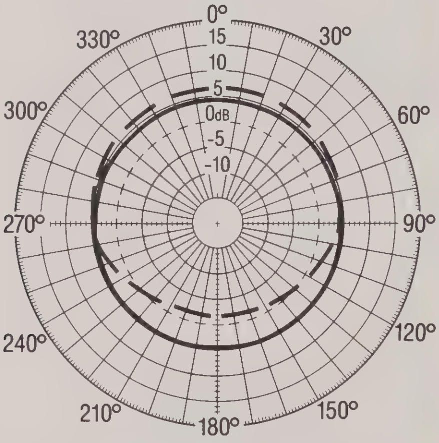
For a circular horizontal pattern, the radiating elements are vertically separated on opposite sides of the mast, which gives a 3 dB gain.

For an offset pattern, the radiating elements are positioned in line, colinearly. This provides a 6.0 dB forward gain with 2.5 dB on the side and a minus 1.5 dB on the back.

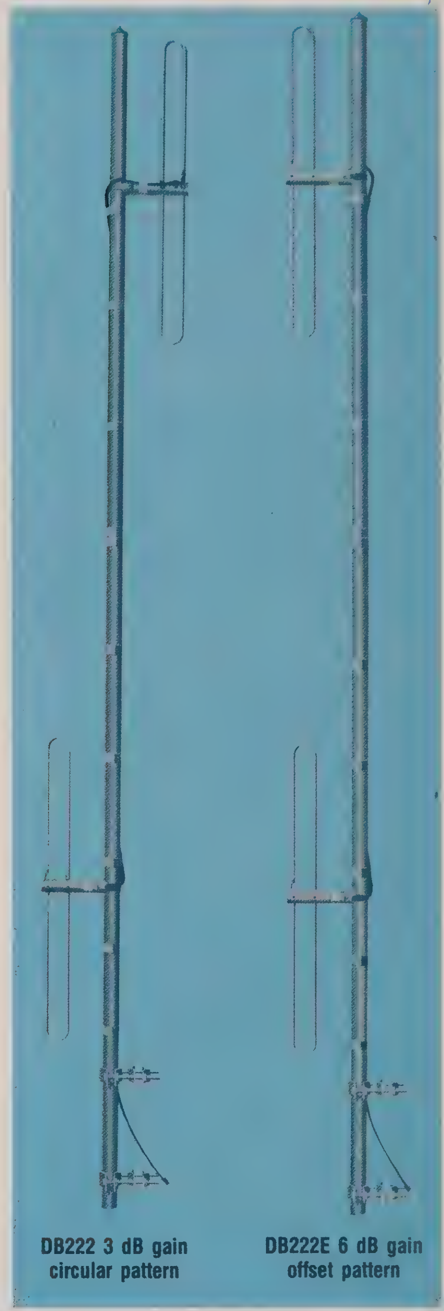
The antenna is shipped with the pattern shape specified, but it can be changed in the field.

Ordering Information

Please specify exact frequency range (and termination if non-standard). Order the DB222 for a circular pattern, the DB222E for offset. Clamps for top mounting are supplied, but for side mounting order DB5001 Side Mount Kit.



Horizontal patterns of the DB222 (3 dB) and DB222E (6 dB).



DB222 3 dB gain circular pattern

DB222E 6 dB gain offset pattern

Mechanical Data

Materials:	
Mast (aluminum) — in. (mm)	1.75 (44.45) with .062 to .125 (1.57 to 3.18) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.6 (.149)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	64 (29.03)
Wind rating:*	
Survival w/o ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	90 (145)
Overall length (150-174 MHz) — in. (mm)	127 (3226)
Net weight (w/clamps) — lbs. (kg)	16 (7.26)
Shipping weight (w/clamps) — lbs. (kg)	30 (13.61)
Mounting Clamps (DB365) are supplied with the antenna.	

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.

**NOTE: The mechanical specifications are degraded for the antenna covering the 120-150 MHz band.

Electrical Data

Frequency Ranges — MHz	120-144*, 137-143, 144-149, 150-158, 158-166, 166-174
Bandwidth	See Chart
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	
Omni pattern — dB	3.0
Offset pattern — dB	6.0
Maximum power input — watts	500
Vertical beamwidth (half power points)	36°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of a flexible lead. Other fittings can be supplied on special order.	

*Special cut.

Side Mounting

The following table shows the approximate gains of the DB222 and DB222E side mounted on triangular towers measuring 18″ to 24″ (457.2 to 609.6 mm) between legs. 0° azimuth is the direction the side mount arm points out from the tower.

Antenna	Azimuth			
	0°	90°	180°	270°
DB222 Omni	4.0 dB	5.5 dB	–3.0 dB	5.5 dB
DB222E, elements facing away from tower	6.3 dB	4.5 dB	–7.0 dB	4.5 dB
DB222E, elements facing toward tower	3.0 dB	5.0 dB	–1.0 dB	5.0 dB

DB224 BROAD BAND ANTENNA
6 or 9 dB GAIN, 120-174 MHz

DECIBEL

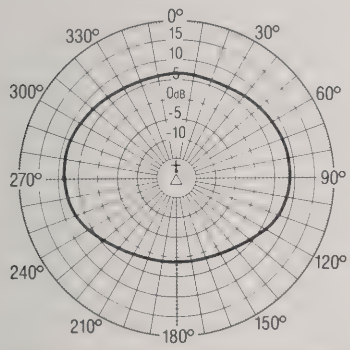
The DB224 is a lightweight, high-gain antenna for 120-174 MHz. It has a broad 10 dB bandwidth, and it provides optimum performance in single or multi-frequency systems.

It can be mounted on the top or side of a tower and arrayed to give a circular or offset horizontal pattern. Its broad response — 10 MHz or more in the 150-174 MHz range — permits it to perform efficiently on both transmit and receive frequencies.

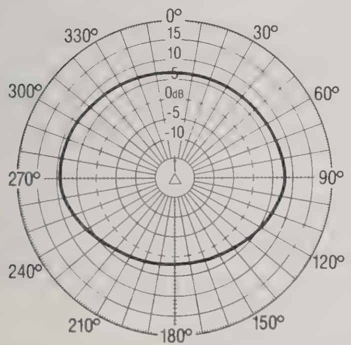
The construction of the antenna assures superior lightning protection. The radiators operate at DC ground, and the aluminum mast with its pointed top cap provides a positive low resistance discharge path to the tower or ground system.

Side Mounting

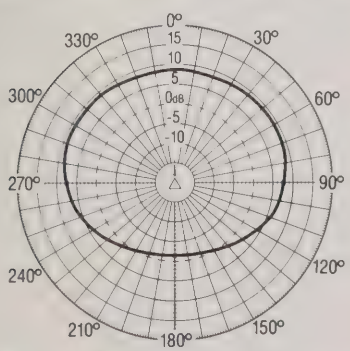
The patterns indicate the typical pattern shape of the antenna side mounted on a tower with an 18″ to 24″ (457.2 to 609.6 mm) face.



DB224 (omni) mounted on side of tower



DB224E, elements pointed toward the tower



DB224E, elements pointed away from the tower

Radiation Patterns

When the four elements are positioned evenly, every 90° around the mast, a 6 dB gain circular pattern results.

When the four elements are positioned in line, collinearly, a 9 dB gain offset pattern is created.

For ease of handling and shipping, the mast is made in two sections. A unique center splice assures proper alignment.

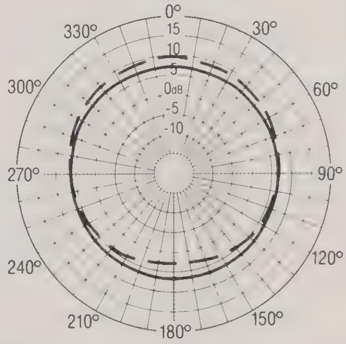
Split Version

A split version of the DB224, two antennas on the same mast, is available in both 3 dB omni and 6 dB directional patterns. Separate feed lines terminate at the bottom of the mast, and each antenna operates independently of the other in omni or directional pattern. Isolation is 35 dB or more.

Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order the DB224 or DB224S Split Antenna for circular patterns, the DB224E or DB224ES Split Antenna for offset patterns. Clamps for top mounting are supplied, but for side mounting, order the DB5001 Side Mount Kit. The DB224X has a shortened mast to permit air shipment.

Top Mounting

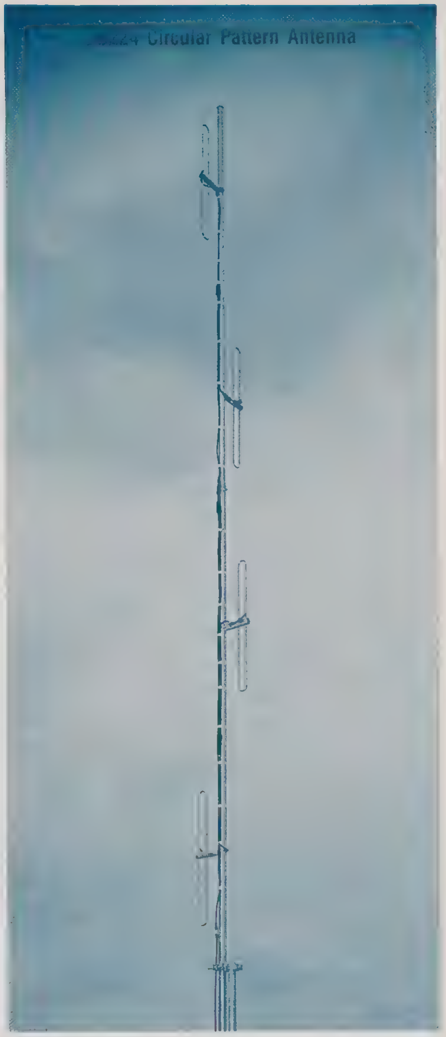


Horizontal patterns of the DB224 (6 dB) and DB224E (9 dB).

Electrical Data

Frequency Ranges — MHz	118-138*, 138-150, 150-160, 155-165, 164-174
Bandwidth (150-174 MHz) — MHz	10
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	
Omni pattern — dB	6.0
Offset pattern — dB	9.0
Maximum power input — watts	500
Vertical beamwidth (half power points)	16°
Decoupling between antennas (split models) — dB	35 minimum
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of a flexible lead. Other fittings can be supplied on special order.	

*Gain and bandwidth are reduced in the 120-150 MHz band. Special cut for 120-138 MHz band.



Mechanical Data

Materials:	
Mast — upper (aluminum) — in. (mm)	1.75 (44.45) OD with .062 to .125 (1.57 to 3.18) wall
Mast — lower (aluminum) — in. (mm)	2 (50.8) OD with .125 to .187 (3.18 to 4.75) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	3.15 (.292)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	126 (57.15)
Wind rating:*	
Survival w/o ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	74 (119)
Overall length (150-174 MHz) — in. (mm)	255 (6477)
Shipping length — in. (mm)	148 (3759)
Net weight (w/clamps) — lbs. (kg)	32 (14.51)
Shipping weight (w/clamps) — lbs. (kg)	48 (21.77)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted.

NOTE: The mechanical specifications are degraded for the antenna covering the 120-150 MHz band.

DB225 SEMICIRCULAR PATTERN ANTENNA 5 dB GAIN, 33-174 MHz

The basic DB225 is a 2-element antenna that provides a semicircular horizontal pattern with a maximum forward gain of 5 dB. For additional gain, stacked arrays of two antennas provide 8 dB gain, and a four-antenna array provides 11 dB gain. **The 74 and 160 MHz models are retunable in the field!**

A vertical spacing of .75 to 1.0 wavelength between antennas is recommended. However, the antennas can be fanned apart for a wider angle of coverage. Forward gain will be reduced.

Applications

The broad horizontal pattern and high front-to-back ratio of the DB225 makes it ideal for the following applications:

1. In mobile systems that need additional gain in one sector,
2. In stations located along the coast or with geographical boundaries,
3. In point-to-point systems where gain is required over a broad angle to reach several locations,
4. In systems to reduce interference from other stations on the backside of the antenna.

The DB225 is designed to operate in severe environments. The size and thickness of the materials are increased as the size of the antenna is enlarged. Elements are made of .75″ (19.05 mm) tubing and reinforced with .875″ (22.23 mm) sockets at the boom. Special heavy duty clamps and orientation brackets are supplied with larger models. The 144-174 MHz antenna has a notched boom and stainless band clamp for mounting.

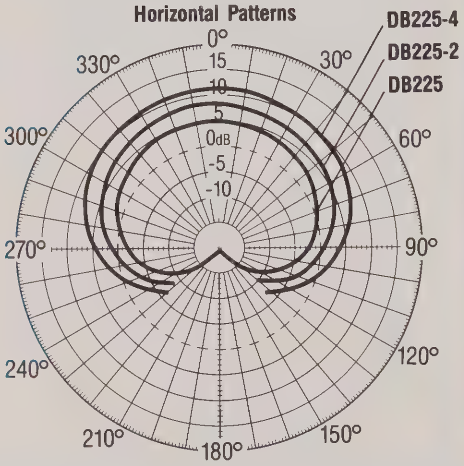
The DB225 must be mounted on and work against a metallic member parallel to and longer than the folded radiator. This metallic member can be a tower leg or a pipe extending from the top or along the face of a tower or wood pole.

Electrical Data

Frequency Ranges — MHz	33-50, 66-88, 118-150, 150-174
Bandwidth — MHz	
35 MHz Range	0.35
50 MHz Range	0.50
74 MHz Range	0.75
160 MHz Range	2.00
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Maximum gain (over half-wave dipole) — dB	5.0
Maximum power input — watts	500
Horizontal beamwidth (half power points)	120°
Front to Back ratio* — dB	18
Lightning protection	Direct ground
Standard termination: Captive Type N-Male attached to end of a flexible lead. Other fittings can be supplied on special order.	

*Note: When mounted on typical 12″ to 24″ (304.8 to 609.6 mm) tower.

160 MHz range can be shipped by UPS.


Horizontal Patterns

Ordering Information

Please specify exact frequency (and termination if non-standard). Order the DB225 5 dB gain single antenna, the DB225-2 8 dB 2-stack array or the DB225-4 11 dB 4-stack array. Clamps and, for larger models, orientation brackets are supplied with the antennas to fit round tower members from 1.25″ to 3″ (31.75 to 76.2 mm) OD and angle members up to 2″ (50.8 mm) on a side. Other size clamps can be furnished on special request.

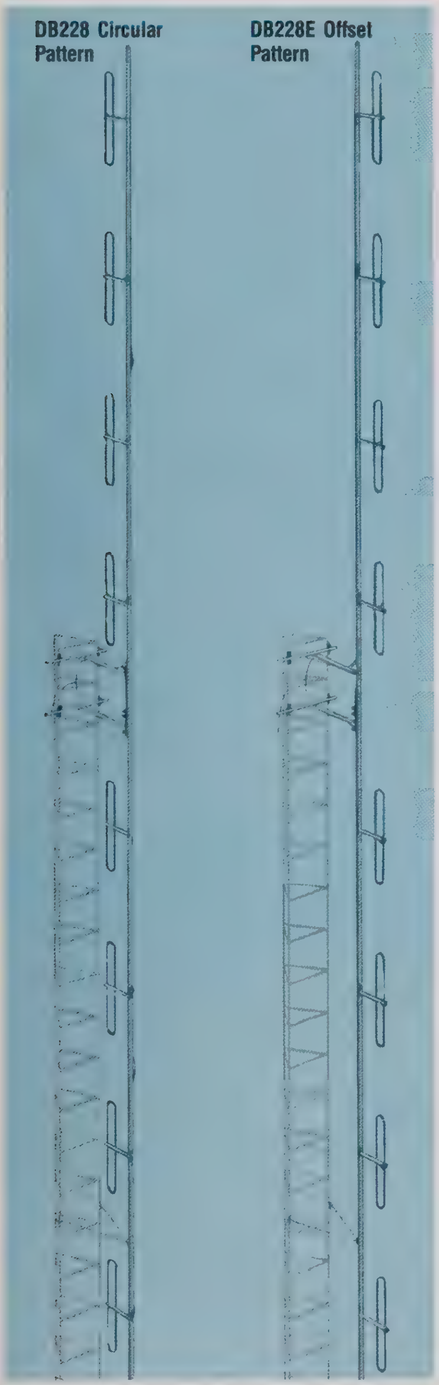
DB225 Antenna

Mechanical Data

	35 MHz	50 MHz	74 MHz	160 MHz
Materials:				
Support boom (aluminum) — in. (mm)	2×3 (50.8×76.2) with .125 (3.18) wall	2×3 (50.8×76.2) with .125 (3.18) wall	2×3 (50.8×76.2) with .125 (3.18) wall	1.5×2 (38.1×50.8) with .125 (3.18) wall
Elements (aluminum) — in. (mm)	.75 (19.05) diameter w/.87 (22.1) and 1 (25.4) diameter sockets	.75 (19.05) diameter w/.87 (22.1) and 1 (25.4) diameter sockets	.75 (19.05) diameter w/.87 (22.1) and 1 (25.4) diameter sockets	.50 (12.7) diameter w/.625 (15.88) diameter sockets
Bracket — in. (mm)	Half-T type, Gal. steel 2 (50.8) OD	Half-T type, Gal. steel, 2 (50.8) OD	Half-T type, Gal. steel, 2 (50.8) OD	Notched boom
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	S.S. band clamp
Maximum exposed area (flat plate equivalent) — ft² (m²)	3.21 (.298)	2.32 (.216)	1.36 (.126)	.45 (.042)
Wind rating:				
Survival without ice — mph (km/hr)	97 (156)	over 125 (201)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (113)	118 (190)	over 125 (201)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	129 (58.51)	93 (42.18)	54 (24.49)	18 (8.16)
Height (vertical) — ft. (m)	14 (4.27)	10 (3.05)	6.5 (1.98)	3 (.91)
Width (horizontal) — ft. (m)	4.3 (1.31)	3.9 (1.19)	2.5 (.76)	1.3 (.4)
Net weight (w/clamps, brackets) — lbs. (kg)	37 (16.78)	28 (12.7)	27 (12.25)	3 (1.36)
Shipping weight (w/clamps, brackets) — lbs. (kg)	100 (45.36)	45 (20.41)	39 (17.69)	6 (2.72)

DB228 BROAD BAND ANTENNA 9 or 12 dB GAIN, 120-174 MHz

DECIBEL



A high gain, broad band antenna for 120-174 MHz, the DB228 combines two modified DB224E offset-pattern antennas. They can be mounted and phased to provide a 9 dB gain circular or a 12 dB gain offset horizontal pattern.

The normal mounting for the DB228 is half above and half below the top of a tower. It can also be fully side mounted and the radiation pattern will be about the same as that of a side-mounted DB224 with an increased gain of 2.8 dB.

Both DB224 antennas are mounted with the ends together, and the phasing harness is terminated at the center. A special bracket positions the antenna at a predetermined distance from the tower.

Radiation Patterns

When the antenna is mounted with all elements pointed toward the tower, a circular pattern results. When the elements are pointed away from the tower, an offset pattern occurs. The pattern can be changed in the field by rotating the mast 180°.

An unusually broad band is achieved through the use of folded dipole elements fed by a binary cable harness. Gain and VSWR are virtually constant across the band when used in single or multi-frequency systems.

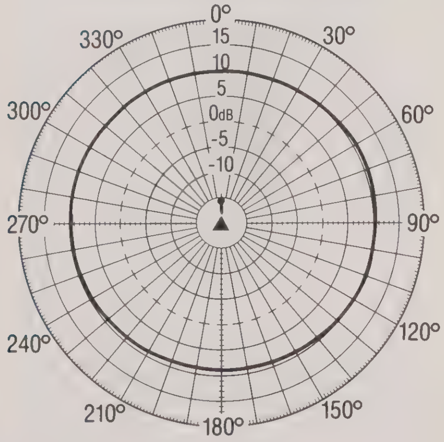
Used with a suitable duplexer, a single DB228 and transmission line can provide symmetrical patterns for both transmit and receive.

The DB228 is practically immune to lightning damage because it is made of metal and all elements operate at DC ground.

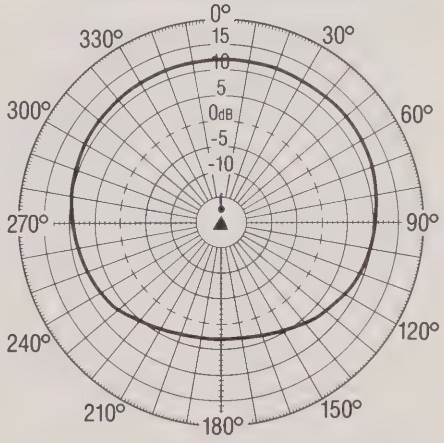
Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order DB228 for an omni pattern, DB228E for offset. A mounting bracket, one sway brace and adjustable clamps for 12″ to 36″ (304.8 to 914.4 mm) between lower legs are included. The clamps fit round tower members up to 3″ (76.2 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps are available on special order. If the antenna is to be side mounted, an extra 12038 sway brace must be ordered.

DB228 Horizontal Circular Pattern



DB228E Horizontal Offset Pattern



Electrical Data	
Frequency Ranges — MHz	120-150, 160-160, 155-165, 164-174
Bandwidth (150-174 MHz) — MHz	10
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	
Omni pattern — dB	9
Offset pattern — dB	12
Maximum power input — watts	500
Vertical beamwidth (half power points)	8°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of a flexible lead. Other fittings are available on special order.	

Note: Gain and bandwidth are reduced in the 120-150 MHz band. Contact factory for details.

Mechanical Data	
Materials:	
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Maximum exposed area (flat plate equivalent) — ft² (m²)	7.3 (.68)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	292 (132.45)
Wind rating:	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	74 (119)
Overall length (150-174 MHz) — in. (mm)	488 (12,395)
Shipping length — in. (mm)	148 (3,759)
Net weight (w/clamps, brackets) — lbs. (kg)	72 (32.66)
Shipping weight (w/clamps, brackets) — lbs. (kg)	142 (64.41)

Note: The mechanical specifications are degraded for the antenna covering the 120-150 MHz band.

DB230 BROAD DIRECTIONAL ANTENNA
7 dB GAIN, 33-174 MHz

DECIBEL

A 3-element Yagi antenna, the DB230 gives maximum forward gain consistent with good front to back ratio. It can be mounted to the top or side of a tower or wood pole, and orientation is not critical since gain is relatively broad.

For additional gain, two antennas can be stacked for 10 dB gain, four antennas for 13 dB gain. A vertical spacing of .75 to 1.0 wavelengths between antennas is recommended.

Applications

The DB230 is ideal for the following uses:
1. In mobile systems that need additional gain in a sector;
2. In point-to-point systems that require broad gain to reach several locations,
3. In systems needing to reduce interference from other stations on the backside of the antenna.

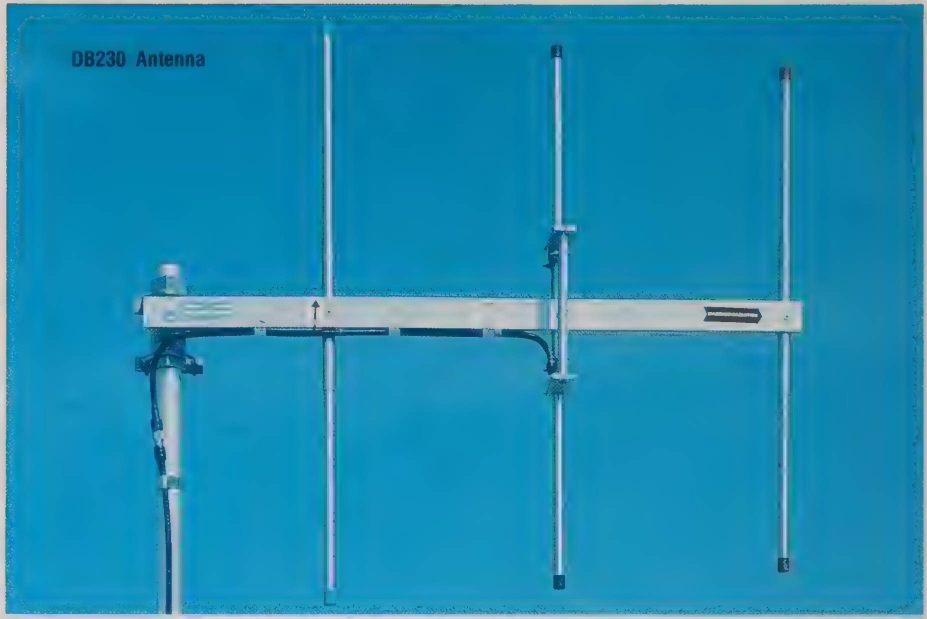
The antenna withstands severe environmental conditions. As antenna size increases, the thickness of the metal increases. Elements are made of .75″ (19.05 mm) tubing and reinforced with .875″ (22.23 mm) sockets at the boom.

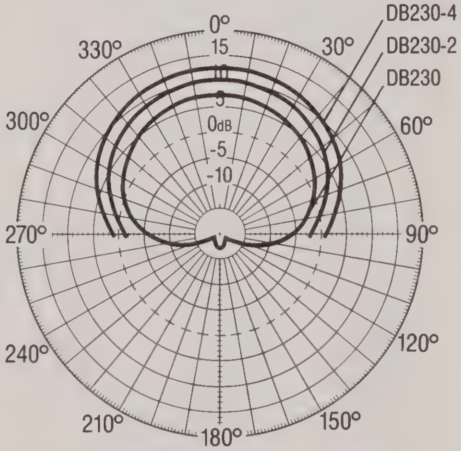
Constructed entirely of metal with all elements directly grounded, the antenna is almost immune to lightning.

The DB230 is assembled and adjusted for minimum VSWR at the factory. No field adjustment is required. **The 74 and 160 MHz models are field tunable!**

Ordering Information

Please specify frequency (and termination if non-standard). Order DB230 for a 7 dB gain single Yagi, DB230-2 for a 2-antenna stacked array with 10 dB gain, or DB230-4 for four stacked antennas with 13 dB gain. Orientation brackets (for larger antennas) and mounting clamps are included. Clamps fit tower members from 1.25″ to 3″ (31.75 to 76.2 mm) OD, angle members up to 2″ (50.8 mm). Other size clamps can be special ordered. For wooden pole mounting, order special clamp DB365-W.





DB230 Horizontal Radiation Pattern

Electrical Data

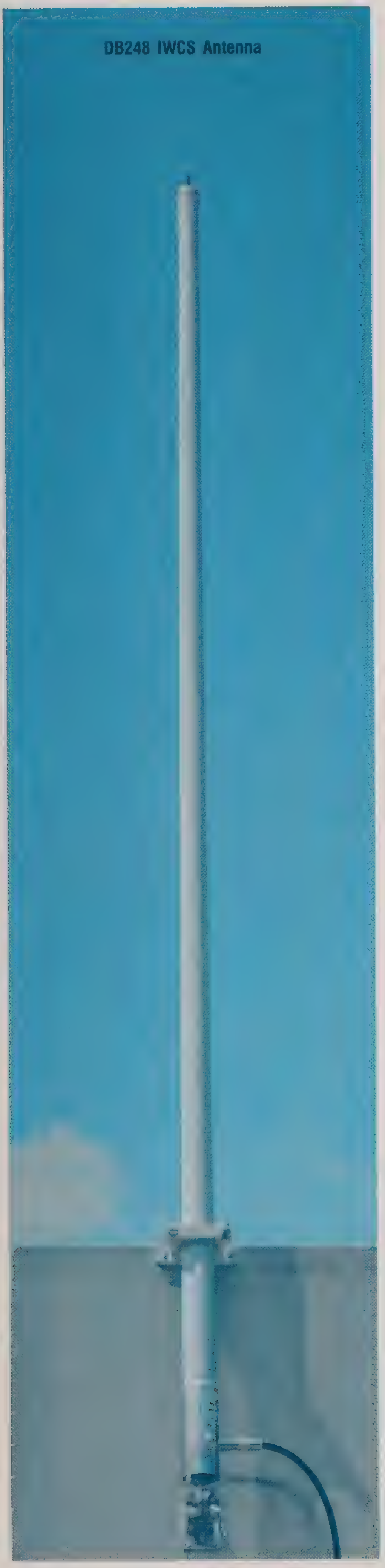
Frequency Ranges — MHz	33-50, 66-88, 120-144, 150-174
VSWR Bandwidth	2 to 1 VSWR
35 MHz Range	1.0 MHz
50 MHz Range	1.5 MHz
74 MHz Range	2.0 MHz
160 MHz Range	6.0 MHz
VSWR Bandwidth	1.5 to 1 VSWR
35 MHz Range	0.5 MHz
50 MHz Range	0.7 MHz
74 MHz Range	1.0 MHz
160 MHz Range	3.0 MHz
Nominal impedance — ohms	50
Gain — dB	7.0
Maximum power input — watts	500
Horizontal beamwidth (half power points)	76°
Front to back input — watts	500
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of a flexible lead. Other fittings can be supplied on special order.	

Mechanical Data

	35 MHz Range	50 MHz Range	74 MHz Range	160 MHz Range
Materials:				
Support boom (aluminum) — in. (mm)	2×3 (50.8×76.2) with .125 (3.18) wall	2×3 (50.8×76.2) with .125 (3.18) wall	2×2 (50.8×50.8) with .125 (3.18) wall	2 (50.8) with .078 (1.98) wall
Elements (aluminum) — in. (mm)	.750 (19.05) diameter	.750 (19.05) diameter	.750 (19.05) diameter	.750 (19.05) diameter
Bracket	Half-Y type, Gal. steel 2 (50.8) OD	Half-Y type, Gal. steel, 2 (50.8) OD	Half-T type, Gal. steel, 2 (50.8) OD	Aluminum angle welded to boom
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	Stainless steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	4.74 (.44)	3.98 (.37)	2.28 (.21)	0.92 (.086)
Wind rating:				
Survival without ice — mph (km/hr)	110 (177)	over 125 (201)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	75 (121)	100 (161)	over 125 (201)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	189 (85.73)	159 (72.12)	91 (41.28)	37 (16.78)
Height (vertical) — ft. (m)	13.6 (4.15)	9.7 (2.96)	6.6 (2.01)	3.0 (.91)
Length (horizontal) — ft. (m)	10.5 (3.2)	8.0 (2.44)	6.5 (1.98)	3.4 (1.04)
Net weight (w/clamps, brackets) — lbs. (kg)	57 (25.84)	52 (23.59)	27 (12.25)	11 (4.99)
Shipping weight (w/clamps, brackets) — lbs. (kg)	90 (40.82)*	88 (39.92)	40 (18.14)	26 (11.79)

*Portion mount shipped separately.

DB248 IWCS OMNIDIRECTIONAL ANTENNA
3 dB GAIN, 216-220 MHz



DB248 IWCS Antenna

The DB248 is designed specifically for Intercoastal Waterways Communications Systems. It uses a collinear design and is enclosed in Decibel's new Aeroglas™ fiberglass radome in DB Aquamarine™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The antenna mounts on vessels, platforms and structures via a chrome-plated, threaded brass base that is weather-resistant.

A unique collinear array uses a series of low-loss flat radiators. The feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For lightning protection, a large diameter conductor extends from top to bottom, to provide ground to the tower.

The base has a weather-resistant NF connector side-mounted for convenient termination.

Ordering Information

Order DB248 antenna with 3 dB gain for 216-220 MHz. Vessel Mounting Kit 11570 is optional and consists of an upper support and 1" (25.4 mm) 14 thread laydown mount.

Electrical Data

Frequency Range — MHz	216-220
Bandwidth — MHz	4
VSWR	1.5 to 1
Impedance — ohms	50
Gain — dB	3
Maximum power input — watts	330
Vertical pattern beamwidth (half power points in degrees)	24
Lightning protection	Direct ground
Termination	Type N-Female

Mechanical Data

Materials:	
Radome	Aeroglas™ Fiberglass
Base	Chrome-plated brass
Internal radiators	Brass
Dimensions:	
Length (overall) — ft. (m)	8.92 (2.72)
Length (radome) — ft. (m)	8.46 (2.58)
Length (base) — in. (mm)	5.5 (139.7)
Lateral thrust at 100 mph (161 km/hr) wind velocity — lbs. (kg)	32.3 (14.65)
Net weight — lbs. (kg)	7.36 (3.34)
Shipping weight — lbs. (kg)	12 (5.44)

DB252 PARA-CORNER REFLECTOR ANTENNA
8 dB GAIN, 150-174 MHz

DECIBEL

The DB252 is a rugged, high gain, broad band antenna for 150-174 MHz. It can be mounted on the top or side of a tower or wood pole.

For additional gain, two antennas can be stacked for 11 dB gain, and four antennas can be stacked for 14 dB gain. Coverage can be broadened by fanning the antennas apart; however, forward gain will be reduced somewhat.

If desired, the DB252-2 2-antenna array can be used for a bidirectional pattern by mounting the antennas on opposite sides of the tower for 5 dB gain in each direction.

Design and Construction

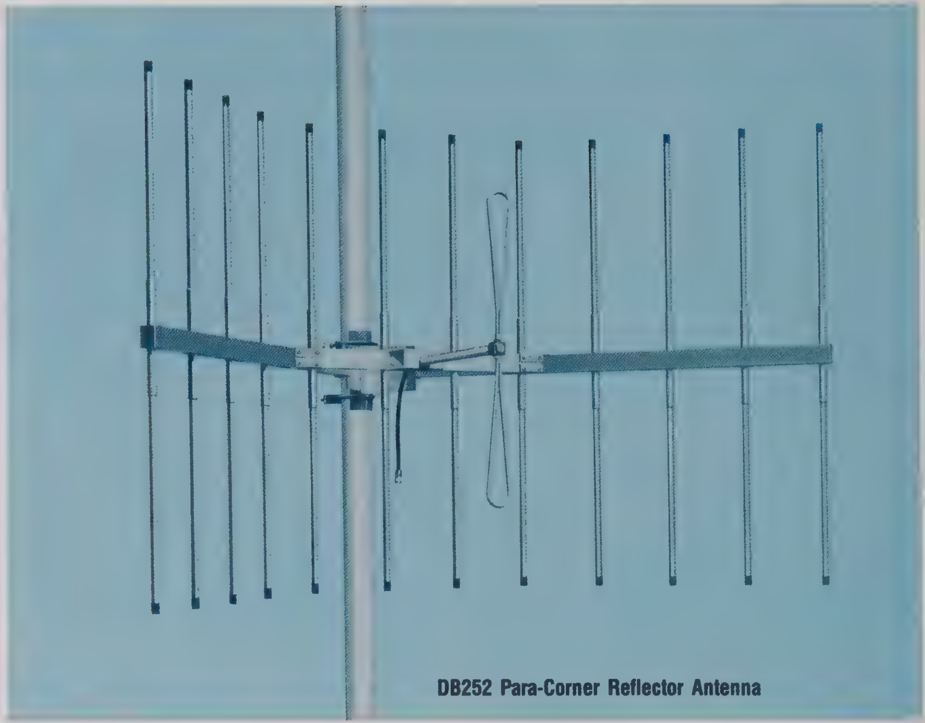
The DB252 uses electrically flat reflector screens that perform like a parabolic plane. The radiating element is a center fed dipole with a unique folded shape.

These features give the antenna a forward gain of 8 dB, a front to back ratio of 25 dB and a 24 MHz bandwidth with 1.5 to 1 or less VSWR.

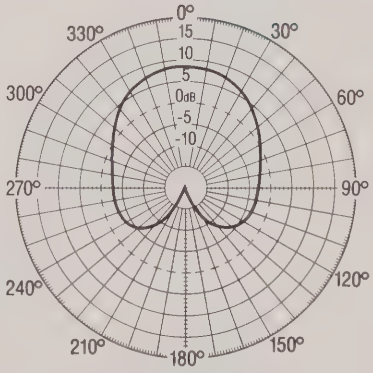
Reflector elements are made of aluminum alloy .75″ (19.05 mm) tubing and reinforced with .875″ (22.23 mm) diameter sockets at the boom. The radiating element is made of .375″ (9.53 mm) solid rod, strengthened by its shape. These make it suitable for extreme environmental conditions.

Ordering Information

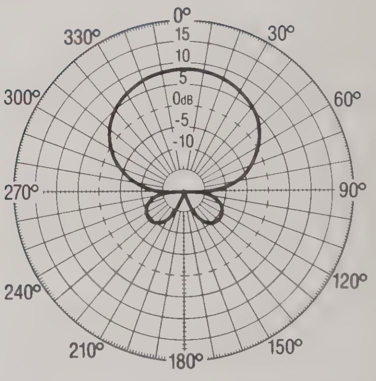
Please specify frequency or frequency range (and termination if non-standard). Order DB252 for 8 dB gain, DB252-2 for a 2-antenna array with 11 dB gain, or DB252-4 for a 4-antenna array with 14 dB gain. Included are 11653 stainless steel V-bolts and straps to fit round members up to 3″ (76.2 mm) OD, angle members up to 2″ (50.8 mm). Other size clamps can be special ordered.



DB252 Para-Corner Reflector Antenna



DB252 horizontal (azimuth) radiation pattern.



DB252 vertical (elevation) radiation pattern.

Electrical Data	
Frequency Range — MHz	150-174
Bandwidth — MHz	24
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	8
Polarization	Vertical*
Maximum power input — watts	500
Horizontal beamwidth of single DB252 (half power)	60°
Vertical beamwidth of single DB252 (half power)	66°
Front to back ratio — dB	25
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

*Can be used as horizontally polarized antenna but mechanical specifications will be slightly degraded.

Mechanical Data	
Materials:	
Reflector support booms (aluminum) — in. (mm)	1.5×2 (38.1×50.8) with .078 (1.98) wall
Reflector elements (aluminum) — in. (mm)	.75 (19.05) diameter
Radiating element boom (aluminum) — in. (mm)	1 (25.4) dia. with .083 (2.11) wall
Radiating element (aluminum) — in. (mm)	.375 (9.53) solid rod
Mounting bracket	Galvanized steel
Mounting clamps	Stainless steel V-bolts
Maximum exposed area (flat plate equivalent) — ft² (m²)	3.2 (.297)
Wind rating:	
Survival without ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	85 (137)
Dimensions:	
Height — in. (mm)	48 (1,219.2)
Maximum width — in. (mm)	75 (1,905)
Maximum depth (front to back) — in. (mm)	39 (990.6)
Net weight — lbs. (kg)	26 (11.79)
Shipping weight — lbs. (kg)	45 (20.41)

DB254 PARA-CORNER REFLECTOR ANTENNA 10 dB GAIN, 406-512 MHz

DECIBEL

Offering exceptional broad bandwidths of 14 to 24 MHz, the DB254 features high gain and highly directional coverage. It can be mounted to the top or side of a tower, or on a wood pole.

For additional gain, two antennas can be stacked for 12.5 dB gain, and four antennas can be stacked for 15 dB gain. Coverage can be broadened by fanning the antennas apart; however, forward gain will be reduced somewhat.

If desired, the 2-antenna array can be mounted on opposite sides of a tower for a bidirectional pattern with 7 dB gain in each direction.

Design and Construction

The DB254 uses three electrically flat reflecting surfaces that perform like a parabolic plane. The radiating element is a center fed dipole.

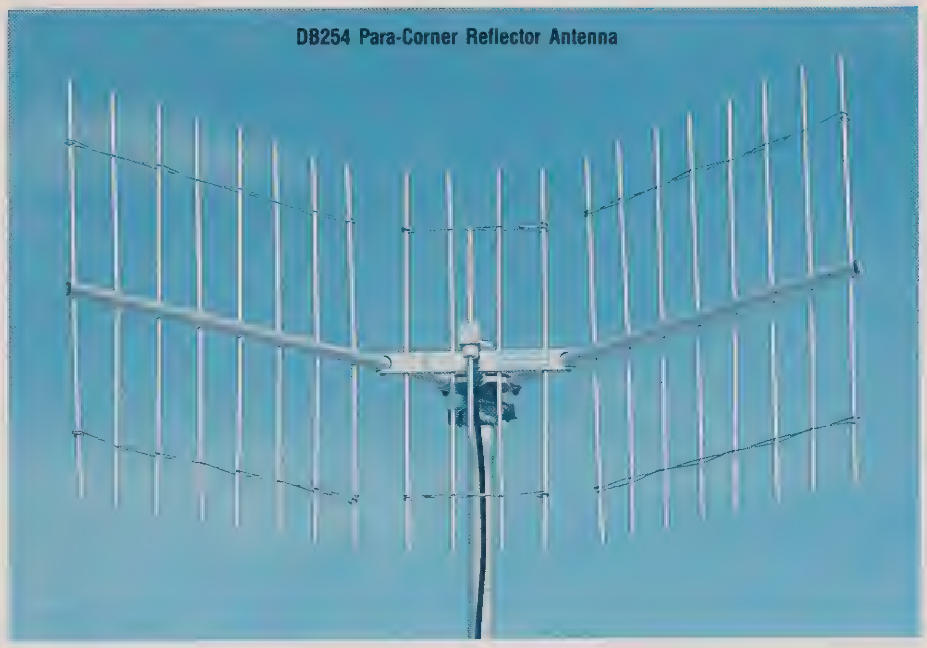
These features give the antenna a forward gain of 10 dB, a front to back ratio of 25 dB and broad bandwidths that allow the antenna to perform well in single or multi-frequency systems.

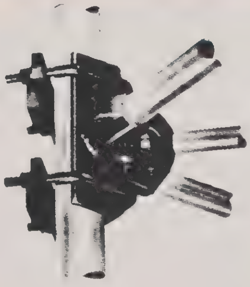
All components in the antenna are made of high strength aluminum alloys, and mounting hardware is made of stainless steel. The design of the enclosed feed assures maximum protection from moisture.

Ordering Information

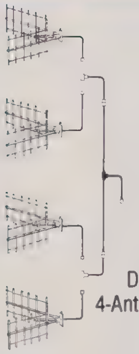
Please specify exact frequency or range (and termination if non-standard). Order DB254 for 10 dB gain, DB254-2 for a 2-antenna array with 12.5 dB gain, or DB254-4 for a 4-antenna array with 15 dB gain. Included are 11653 stainless steel V-Bolts and straps to fit round members up to 3″ (76.2 mm) OD, angle members to 2″ (50.8 mm). Other size clamps can be special ordered.

DB254 Para-Corner Reflector Antenna

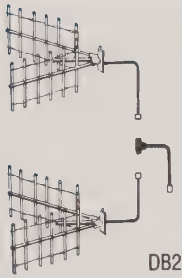




Mounting Bracket



DB254-4
4-Antenna Array



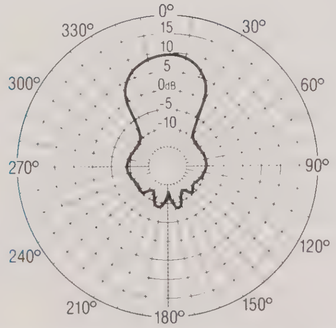
DB254-2
2-Antenna Array

Electrical Data

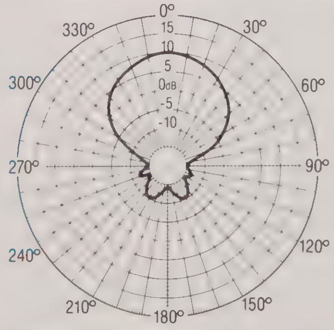
Frequency Ranges — MHz	A = 406-420, B = 425-445, C = 450-470, D = 470-488, E = 488-512
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	10
Polarization	Vertical
Maximum power input — watts	300
Horizontal beamwidth, single DB254 (half power)	38°
Vertical beamwidth, single DB254 (half power)	56°
Front to back ratio — dB	25
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Reflector support booms (aluminum) — in. (mm)	1 (25.4) OD with .083 (2.108) wall
Reflector elements (aluminum) — in. (mm)	.312 (7.925) solid rod
Radiating element boom (aluminum) — in. (mm)	1 (25.4) dia. with .083 (2.108) wall
Radiating element (aluminum) — in. (mm)	.75 (19.05) solid rod
Mounting bracket	Aluminum
Mounting clamps	Stainless steel V-bolts
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.1 (.102)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	44 (19.96)
Wind rating:	
Survival without ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	90 (145)
Dimensions:	
Height — in. (mm)	24 (609.6)
Maximum width — in. (mm)	48 (1,219.2)
Maximum depth (front to back) — in. (mm)	24 (609.6)
Net weight — lbs. (kg)	10 (4.54)
Shipping weight — lbs (kg)	16 (7.26)



Horizontal (azimuth) radiation pattern of DB254.



Vertical (elevation) radiation pattern of DB254.

DB264 BROAD BAND ANTENNA 6 or 9 dB GAIN, 150-174 MHz

DECIBEL

A high gain, lightweight antenna for 150-174 MHz, the DB264 features a 10 MHz bandwidth and an enclosed feed system. It can be mounted on the top or side of a tower and aligned to provide a 6 dB circular or 9 dB offset pattern.

The VAPOR-BLOC® cable harness is weatherproof, and further protection from climate is achieved by enclosing the harness within the metal mast and radiating elements, both of which are vented to prevent moisture accumulation. Only a short pigtail is exposed at the bottom of the mast.

Radiation Patterns

When the four folded dipole elements are positioned evenly every 90 degrees around the mast, the DB264 provides a circular pattern with 6 dB gain. When all elements are aligned collinearly on one side of the mast, the antenna radiates a 9 dB gain offset pattern.

The pattern can be changed in the field with ordinary hand tools.

See accompanying pattern diagrams for side mounted antennas.

For ease in handling, the antenna is shipped in two sections. The cable harness automatically aligns itself when the sections are joined via a heat treated cast aluminum assembly.

For lightning and static protection, the radiators operate at DC ground, and the aluminum mast with a top pointed cap provides a positive low resistance discharge path to the tower or ground system.

Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order DB264 for omni and DB264E for offset pattern. If needed, order DB5001 Side Mount Kit. DB365 Mounting Clamps are supplied to fit round tower members up to 2.75" (69.85 mm) OD and angle members to 2.5" (63.5 mm). Other size clamps can be special ordered.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

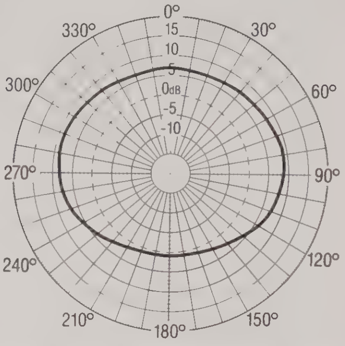
Electrical Data

Frequency Ranges — MHz	150-160, 155-165, 164-174
Bandwidth — MHz	10
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	
Omni pattern — dB	6.0
Offset pattern — dB	9.0
Maximum power input — watts	500
Vertical beamwidth (half power points)	16°
Lightning protection	Direct ground

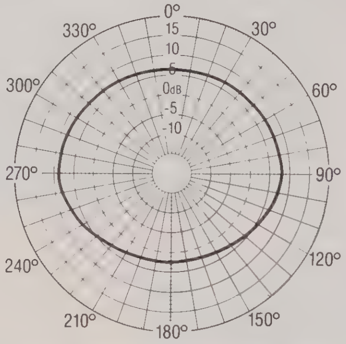
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.

Side Mounting

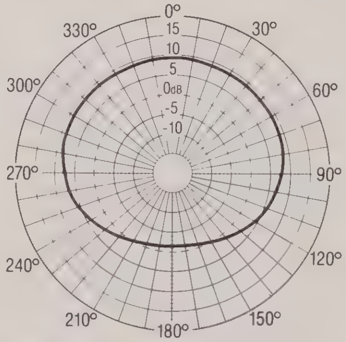
Typical patterns of DB264 side mounted on a tower with an 18" to 24" (457.2 to 609.6 mm) face.



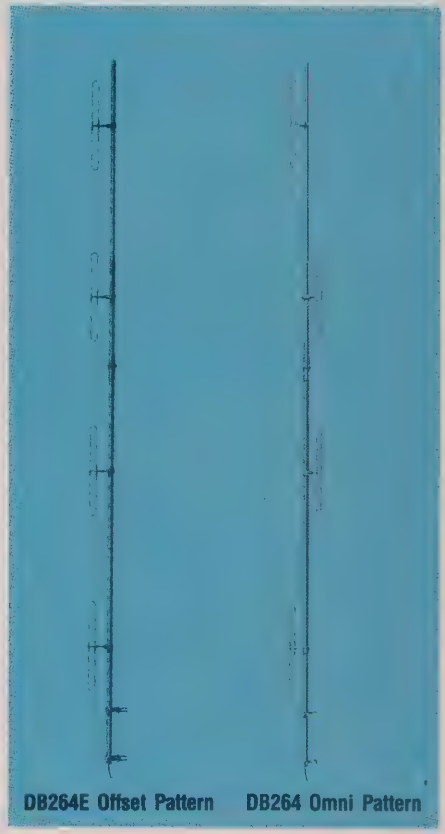
DB264 (omni) mounted on side of tower

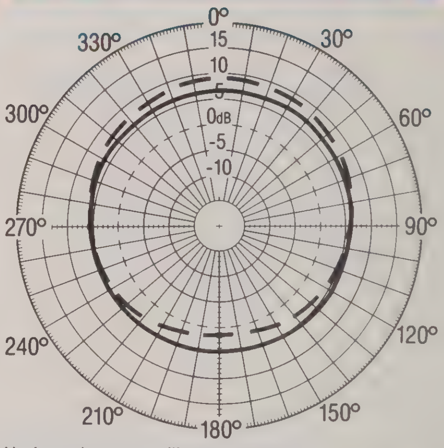


DB264E elements pointed toward tower



DB264E elements pointed away from tower





Horizontal patterns illustrate maximum gain of the DB264 (6 dB) and DB264E (9 dB).

Mechanical Data

Materials	
Mast — upper (aluminum) — in. (mm)	1.75 (44.45) OD with .062 to .187 (1.57 to 4.75) wall
Mast — lower (aluminum) — in. (mm)	2 (50.8) OD with .125 to .25 (3.18 to 6.35) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	3.16 (.29)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	126 (57.15)
Wind rating:*	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5" (12.7 mm) radial ice — mph (km/hr)	70 (112.65)
Overall length (150-160 MHz) — in. (mm)	258 (6,553.2)
Shipping length — in. (mm)	148 (3,759.2)
Net weight (w/clamps) — lbs. (kg)	36 (16.33)
Shipping weight (w/clamps) — lbs. (kg)	59 (26.76)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.

DECIBEL

DB268 BROAD BAND ANTENNA
9 or 12 dB GAIN, 150-174 MHz

A high gain, broad band antenna for 150-174 MHz, the DB268 combines two modified DB264E offset-pattern antennas with enclosed cable harness. They can be mounted and phased to provide a 9 dB gain circular or 12 dB gain offset horizontal pattern.

The two modified DB264E antennas are mounted with their ends together, the harness terminated at the center.

The DB268 is designed to mount half above and half below the top of a tower. A special mounting bracket positions the antenna at a predetermined distance from the tower.

The harness is moisture resistant VAPOR-BLOC® cable, a Decibel exclusive. Further climate protection is achieved by enclosing it within the metal mast and the radiation elements, both of which are vented to prevent moisture accumulation.

Radiation Patterns

When the antenna is mounted with all elements pointed toward the tower, a circular pattern results. When the elements are pointed away from the tower, an offset pattern occurs. The pattern can be changed in the field by rotating the mast 180 degrees.

A broad 10 MHz bandwidth is achieved through the use of folded dipole elements fed by a binary cable harness. Gain and VSWR are virtually constant across the band when the antenna is used in single or multi-frequency systems.

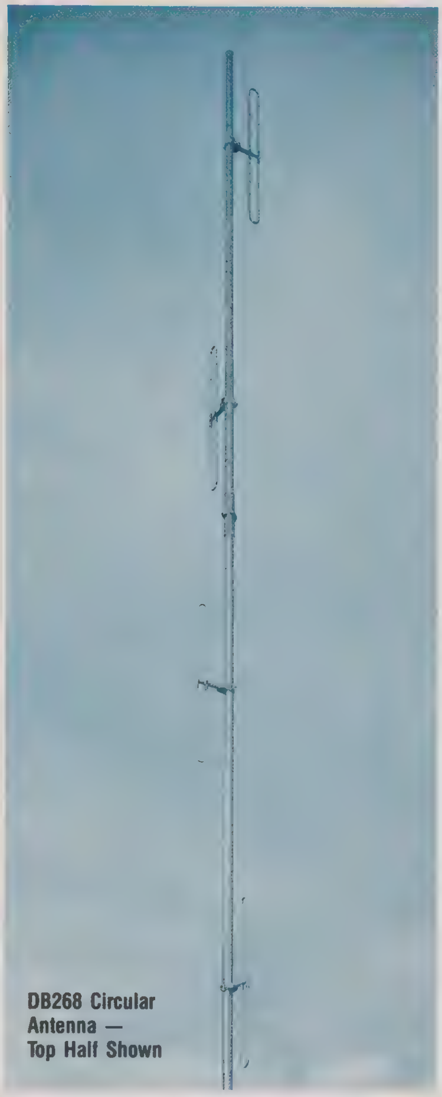
With a suitable duplexer, a lone DB268 and transmission line can provide symmetrical patterns for both transmit and receive.

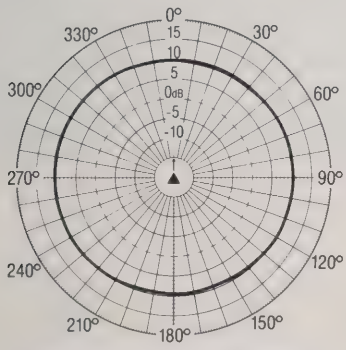
The DB268 is practically immune to lightning because it is made of metal and all elements operate at DC ground.

Ordering Information

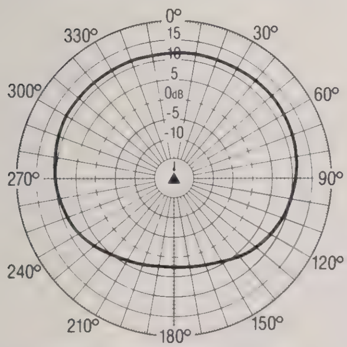
Please specify exact frequency or range (and termination if non-standard). Order DB268 for an omni pattern, DB268E for an offset pattern. A mounting bracket, adjustable clamps for 12″ (304.8 mm) to 36″ (914.4 mm) between the lower legs, and one sway brace are included. An additional 12038 Sway Brace should be ordered if the antenna is to be completely side mounted. The clamps fit round members up to 3″ (76.2 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps are available on special order.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

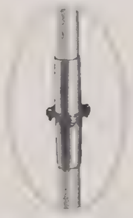

DB268 Circular Antenna — Top Half Shown

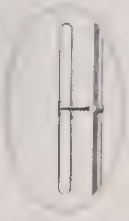


DB268 circular horizontal pattern



DB268E offset horizontal pattern


Heat treated cast aluminum center joints for strength and ease of handling.


Enclosed cable harness for weather protection.

Electrical Data

Frequency Ranges — MHz	150-160, 155-165, 164-174
Bandwidth — MHz	10
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	
Omni pattern	9
Offset pattern	12
Maximum power input — watts	500
Vertical beamwidth (half power)	8°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Masts (aluminum) — in. (mm)	1.75 to 2 (44.45 to 50.8) OD with .125 to .187 (3.175 to 4.75) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	7.3 (.678)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	292 (132.45)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	1100 (152.24)
Wind rating:	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (112.65)
Overall length — in. (mm)	506 (12,852.4)
Shipping length — in. (mm)	148 (3,759.2)
Net weight (w/clamps) — lbs. (kg)	85 (38.56)
Shipping weight (w/clamps) — lbs. (kg)	156 (70.76)

Mounting stand and some hardware shipped separately.

DB274 RUGGEDIZED ANTENNA 6 or 9 dB GAIN, 216-220 MHz

DECIBEL

The DB274 is a ruggedized, high gain antenna for 216-220 MHz. It can be mounted on the top or side of a tower and aligned to provide a 6 dB circular or 9 dB offset pattern.

VAPOR-BLOC® cable harness is weatherproof, and further protection from climate is achieved by enclosing the harness within the metal mast and radiating elements, both of which are vented to prevent moisture accumulation. Only a short pigtail is exposed at the bottom of the mast.

Radiation Patterns

When the four folded dipole elements are positioned evenly every 90 degrees around the mast, the DB274 provides a circular pattern with 6 dB gain. When all elements are aligned collinearly on one side of the mast, the antenna radiates a 9 dB gain offset pattern.

The pattern can be changed in the field with ordinary hand tools.

See accompanying pattern diagrams for side mounted antennas.

For ease in handling, the antenna is shipped in two sections. The cable harness automatically aligns itself when the sections are joined via a heat treated cast aluminum assembly.

For lightning and static protection, the radiators operate at DC ground, and the aluminum mast has a top pointed cap and provides a positive low resistance discharge path to the tower or ground system.

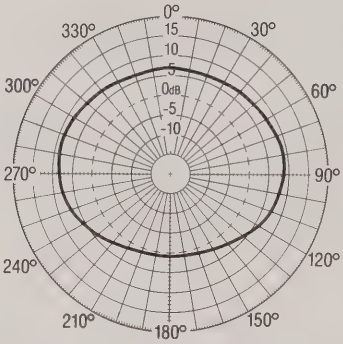
Ordering Information

Please specify frequency or range and termination if non-standard. Order DB274 for omni and DB274E for offset pattern. If needed, order DB5001 Side Mount Kit. DB365 Mounting Clamps are supplied to fit round tower members up to 2.75″ (69.85 mm) OD and angle members to 2.5″ (63.5 mm). Other size clamps can be special ordered.

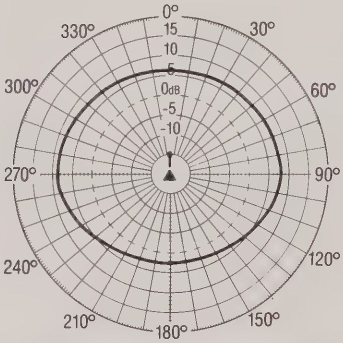
VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

Side Mounting

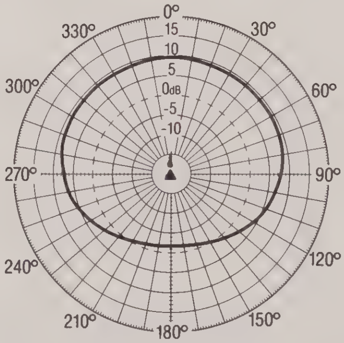
Typical patterns of DB274 side mounted on a tower with an 18″ to 24″ (457.2 to 609.6 mm) face.



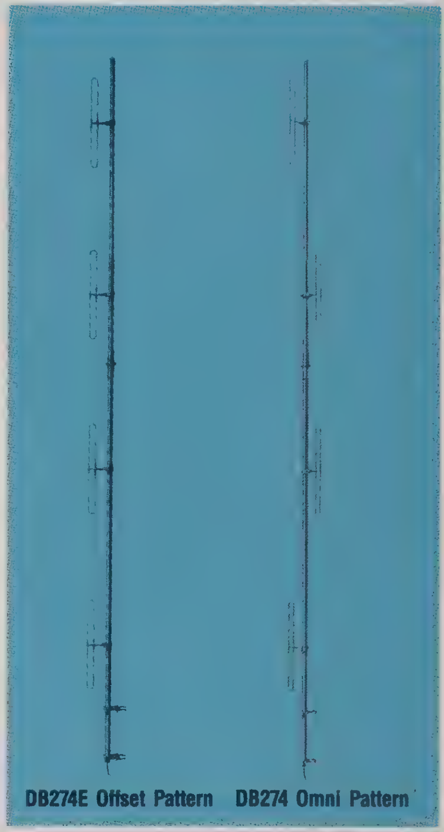
DB274 (omni) mounted on side of tower

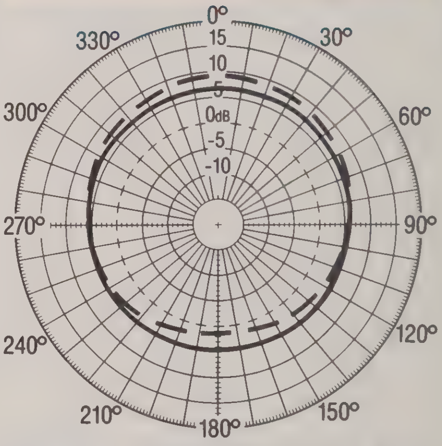


DB274E elements pointed toward tower



DB274E elements pointed away from tower





Horizontal patterns illustrate maximum gain of the DB274 — (6 dB) and DB274E --- (9 dB).

Electrical Data

Frequency Range — MHz	216-220
Bandwidth — MHz	4
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	
Omni pattern — dB	6.0
Offset pattern — dB	9.0
Maximum power input — watts	500
Vertical beamwidth (half power points)	16°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials	
Mast — upper (aluminum) — in. (mm)	1.75 (44.45) OD with .062 to .187 (1.57 to 4.75) wall
Mast — lower (aluminum) — in. (mm)	2 (50.8) OD with .125 to .25 (3.18 to 6.35) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	3.16 (.29)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	126 (57.15)
Wind rating:*	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (112.65)
Overall length (150-160 MHz) — in. (mm)	258 (6,553.2)
Shipping length — in. (mm)	148 (3,759.2)
Net weight (w/clamps) — lbs. (kg)	36 (16.33)
Shipping weight (w/clamps) — lbs. (kg)	59 (26.76)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.

DB278 RUGGEDIZED ANTENNA
9 or 12 dB GAIN, 216-220 MHz

DECIBEL

A high gain antenna for 216-220 MHz, the DB278 combines two modified DB274E offset-pattern antennas with enclosed cable harness. They can be mounted and phased to provide a 9 dB gain circular or 12 dB gain offset horizontal pattern.

The two modified DB274E antennas are mounted with their ends together, the harness terminated at the center.

The DB278 is designed to mount half above and half below the top of a tower. A special mounting bracket positions the antenna at a predetermined distance from the tower.

The harness is moisture resistant VAPOR-BLOC® cable, a Decibel exclusive. Further climate protection is achieved by enclosing it within the metal mast and the radiation elements, both of which are vented to prevent moisture accumulation.

Radiation Patterns

When the antenna is mounted with all elements pointed toward the tower, a circular pattern results. When the elements are pointed away from the tower, an offset pattern occurs. The pattern can be changed in the field by rotating the mast 180 degrees.

Folded dipole elements are fed by a binary cable harness. Gain and VSWR are virtually constant across the band when the antenna is used in single or multi-frequency systems.

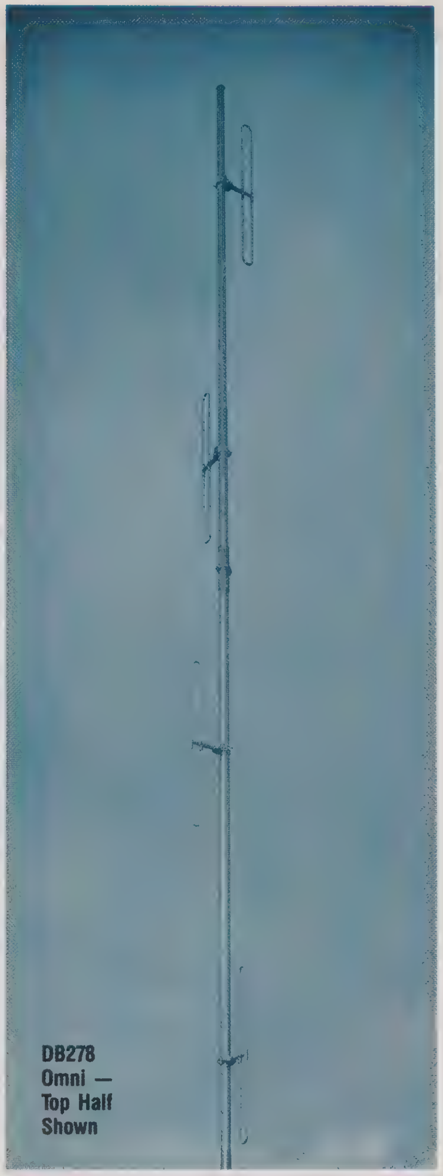
With a suitable duplexer, a lone DB278 and transmission line can provide symmetrical patterns for both transmit and receive.

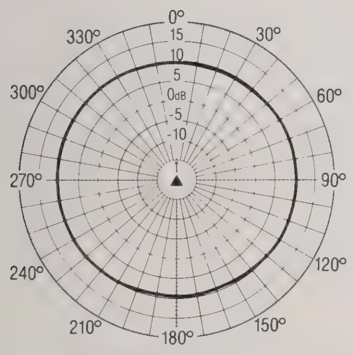
The DB278 is practically immune to lightning because it is made of metal and all elements operate at DC ground.

Ordering Information

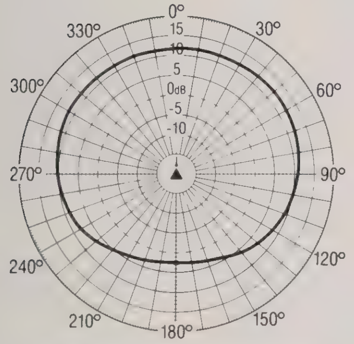
Please specify exact frequency or range (and termination if non-standard). Order DB278 for an omni pattern, DB278E for an offset pattern. A mounting bracket, adjustable clamps for 12″ (304.8 mm) to 36″ (914.4 mm) between the lower legs, and one Sway Brace are included. An additional 12038 Sway Brace should be ordered if the antenna is to be completely side mounted! The clamps fit round members up to 3″ (76.2 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps are available on special order.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

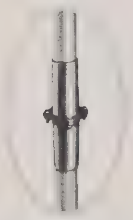




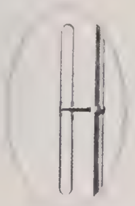
DB278 circular horizontal pattern



DB278E offset horizontal pattern



Heat treated cast aluminum center joints for strength and ease of handling.



Enclosed cable harness for weather protection.

Electrical Data

Frequency Ranges — MHz	216-220
Bandwidth — MHz	4
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	
Omni pattern	9
Offset pattern	12
Maximum power input — watts	500
Vertical beamwidth (half power)	8°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Masts (aluminum) — in. (mm)	1.75 to 2 (44.45 to 50.8) OD with .125 to .187 (3.175 to 4.75) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	7 (.65)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	292 (132.45)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	1100 (152.24)
Wind rating:	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (112.65)
Overall length — in. (mm)	506 (12,852.4)
Shipping length — in. (mm)	148 (3,759.2)
Net weight (w/clamps) — lbs. (kg)	83 (37.65)
Shipping weight (w/clamps) — lbs. (kg)	150 (68.04)

Mounting stand and some hardware shipped separately.

DB286 DIRECTIONAL ANTENNA 10 dB GAIN, 33-174 MHz

A 6-element array, the DB286 consists of two 3-element Yagis spaced one-half wavelength apart and fed in phase through a cable transformer.

It mounts to the top or side of a tower and provides 10 dB gain over a narrow horizontal pattern. The 150 MHz model, if side mounted, must clear the tower by 2′ (606.9 mm) or more. No field tuning is required; the DB286 is assembled and adjusted for minimum VSWR at the factory.

Higher Gain

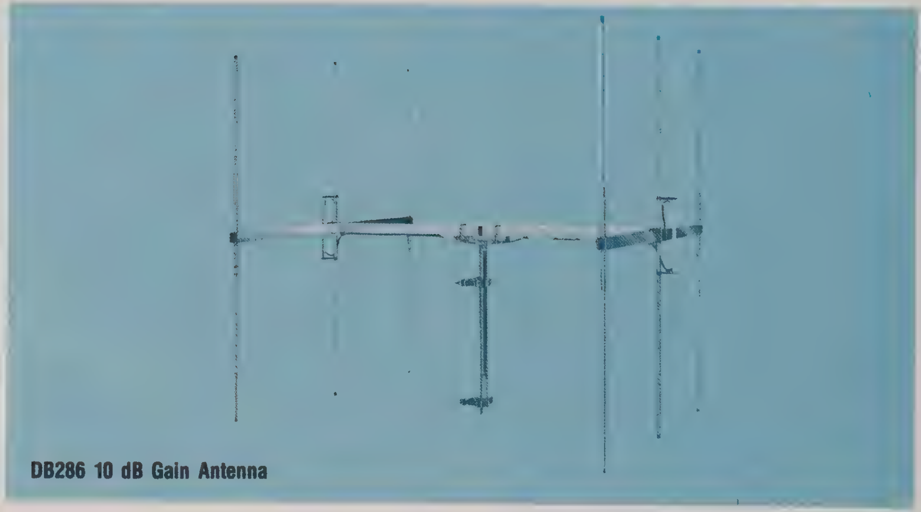
Two antennas can be stacked for 13 dB gain, and four antennas can be stacked for 16 dB gain. A vertical spacing of .75 to 1.0 wavelengths between antennas is recommended.

For right-of-way operations such as pipelines, highways and railroads, bidirectional Model DB286B is available. One of the three element Yagis is reversed, and the antenna provides a gain of 5.5 dB in each lobe of a figure 8 pattern. For a greater gain of 7 dB in each lobe, a DB286-2 can be used with each DB286 pointing in an opposite direction.

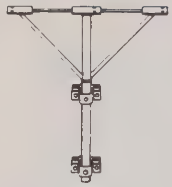
Larger antennas are supplied with heavy duty orientation brackets, and the size and wall thickness is increased on the larger models.

Ordering Information

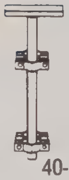
Please specify frequency (and termination if non-standard). Order DB286 for 10 dB gain, DB286-2 for a 2-antenna array with 13 dB gain, the DB286-4 for a 4-antenna array with 16 dB gain, or the DB286B bidirectional antenna. Brackets, V-bolts and clamps are included to fit round members up to 3″ (76.2 mm) OD and angle members up to 2″ (50.8 mm). Other size clamps are available on special order.



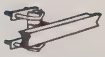
DB286 10 dB Gain Antenna



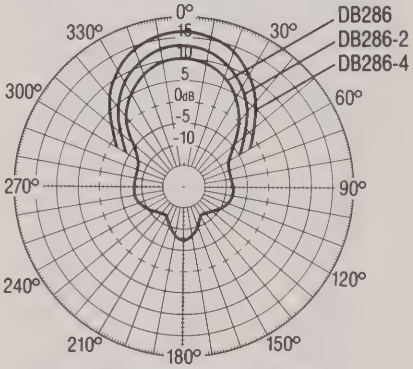
30-40 MHz Y-mount



40-88 MHz T-mount



118-174 MHz Angle mount



DB286 horizontal radiation pattern.

Electrical Data	
Frequency Ranges — MHz	33-50, 66-88, 118-150, 150-174
Bandwidth — MHz	2 to 1 VSWR
At 35 MHz	1.2
At 50 MHz	1.7
At 74 MHz	2.5
At 160 MHz	6.5
Bandwidth — MHz	1.5 to 1 VSWR
At 35 MHz	0.5
At 50 MHz	1.0
At 74 MHz	1.5
At 160 MHz	4.0
Nominal impedance — ohms	50
Maximum midband gain (over half-wave dipole) — dB	10
Maximum power input — watts	500
Horizontal beamwidth (half power)	43°
Front to back ratio — dB	18
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

	35 Mhz Range	50 Mhz Range	74 Mhz Range	160 Mhz Range
Materials:				
Cross boom (aluminum) — in. (mm)	2 (50.8)×3 (76.2) with .125 (3.18) wall	2 (50.8)×3 (76.2) with .125 (3.18) wall	2 (50.8)×2 (50.8) with .125 (3.18) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall
Support booms (2) (aluminum) — in. (mm)	2 (50.8)×3 (76.2) with .125 (3.18) wall	2 (50.8)×3 (76.2) with .125 (3.18) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall
Elements (aluminum) — in. (mm)	.75 (19.05) dia. to 1 (25.4) dia.	.75 (19.05) dia. to 1 (25.4) dia.	.75 (19.05) dia. with .875 (22.23) dia. sockets	.75 (19.05) dia. with .875 (22.23) dia. sockets
Bracket — in. (mm)	Y-mount type, Gal. steel, 2 (50.8) OD	T-mount type, Gal. steel, 2 (50.8) OD	T-mount type, Gal. steel, 2 (50.8) OD	Aluminum angle welded to cross boom
Mounting clamps	Galvanized steel	Galvanized steel	Galvanized steel	Stainless steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	8.76 (.814)	4.99 (.464)	3.41 (.317)	1.5 (.139)
Wind rating:				
Survival without ice — mph (km/hr)	110 (177)	over 125 (201)	over 125 (201)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	75 (120.75)	100 (161)	over 125 (201)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	340 (154.22)	200 (90.72)	136 (61.69)	60 (27.22)
Height (vertical) — ft. (m)	14 (4.27)	10 (3.05)	7 (2.13)	3 (.91)
Width (horizontal) — ft. (m)	14 (4.27)	10 (3.05)	7 (2.13)	4 (1.22)
Depth (horizontal) — ft. (m)	12 (3.66)	8 (2.44)	6 (1.83)	3 (.91)
Net weight (w/clamps, brackets) — lbs. (kg)	125 (56.7)	82 (37.19)	41 (18.6)	17 (7.71)
Shipping weight (w/clamps, brackets) — lbs. (kg)	175 (79.38)	115 (52.16)	52 (23.59)	32 (14.51)

DB292 BROAD BAND YAGI ANTENNA 9.5 dB GAIN, 150-174 MHz

DECIBEL

A 6-element Yagi for 150-174 MHz, the DB292 consists of a reflector, driven element and four directors mounted on a common boom. It mounts to the top or side of a tower or wood pole and provides 9.5 dB gain over a narrow pattern.

A folded dipole as the driven element gives a broad bandwidth of 10 MHz. Gain and VSWR are virtually constant across the band, which permits optimum performance in either single or multi-frequency systems.

The feed is enclosed within the dipole assembly for added protection from ice and snow. All elements are grounded for lightning protection.

Higher Gain

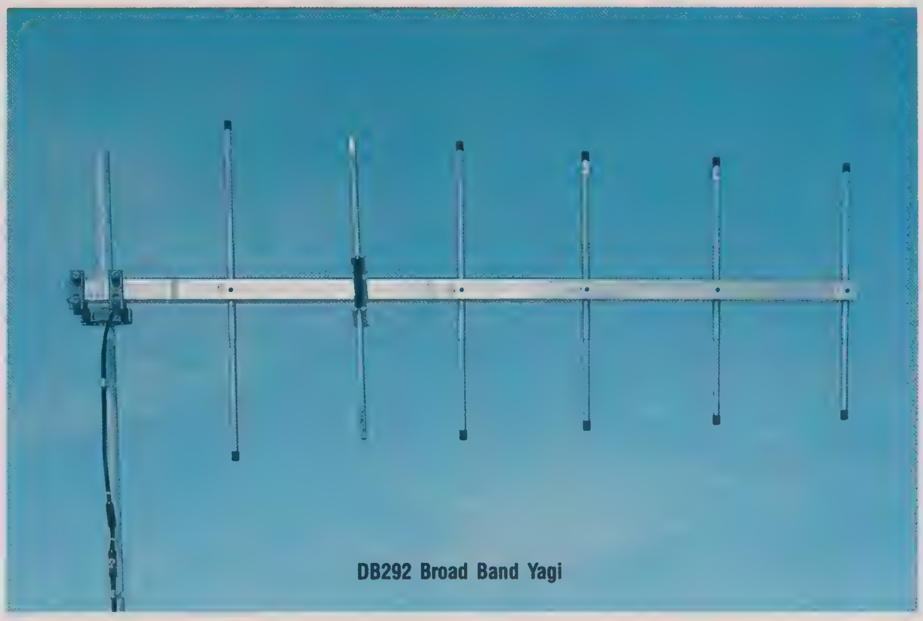
Two antennas can be stacked for 12.1 dB gain, and four antennas can be arrayed for 14.7 dB gain. A vertical spacing of .75 to 1.0 wavelengths between antennas is recommended.

The DB292 has a number of applications:

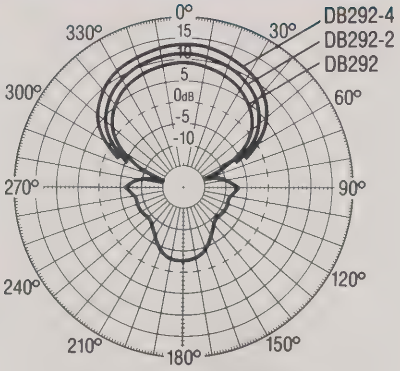
1. In systems that need broad band coverage and protection against icing,
2. In point-to-point systems where high gain is required over a narrow sector,
3. In systems that need to reduce interference on the side or backside.

A rugged antenna designed for severe environments, the DB292 is made of aluminum alloys and reinforced with .875″ (22.225 mm) sockets at the boom. Brackets and hardware are galvanized steel.

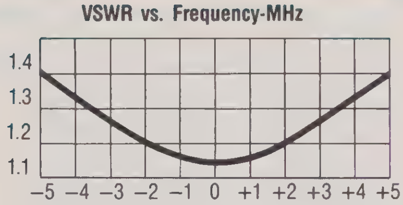
No field tuning is required, the antenna is assembled and adjusted for minimum VSWR at the factory.

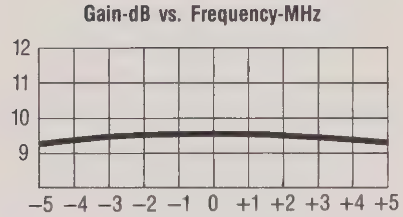


DB292 Broad Band Yagi



Horizontal radiation patterns


VSWR vs. Frequency-MHz


Gain-dB vs. Frequency-MHz

Ordering Information

Please specify frequency or range (and termination if non-standard). Order DB292 for 9.5 dB gain, DB292-2 for 12.1 dB gain or DB292-4 for 14.7 dB gain. Brackets and clamps are supplied to fit round members to 3″ (76.2 mm) OD and angle members to 2″ (50.8 mm). Other size clamps are available on special order.

Electrical Data

Frequency Ranges — MHz	150-160, 155-165, 164-174
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	9.5
Polarization	Vertical
Maximum power input — watts	350
Vertical beamwidth of single antenna (half power)	50°
Horizontal pattern of beamwidth of single antenna (half power)	62°
Front to back ratio — dB	15
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

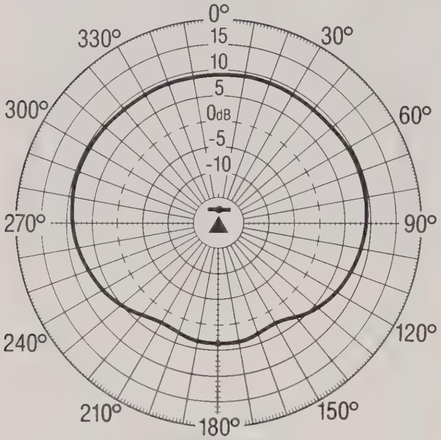
	DB292	DB292-2	DB292-4
Materials:			
Support boom (aluminum) — in. (mm)	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall
Elements (aluminum) — in. (mm)	.75 (19.05) dia. with .875 (22.23) dia. sockets	.75 (19.05) dia. with .875 (22.23) dia. sockets	.75 (19.05) dia. with .875 (22.23) dia. sockets
Dipole (aluminum) — in. (mm)	.625 (15.88) dia.	.625 (15.88) dia.	.625 (15.88) dia.
Mounting brackets	Galvanized steel	Galvanized steel	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.8 (.167)	3.6 (.335)	7.2 (.669)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	72 (32.66)	144 (65.32)	288 (130.63)
Wind rating:			
Survival without ice — mph (km/hr)	100 (161)	100 (161)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (113)	70 (113)	70 (113)
Height — in. (mm)	38 (965.2)	110 (2,794)	254 (6,452)
Overall length — in. (mm)	84 (2,134)	84 (2,134)	84 (2,134)
Net weight — lbs. (kg)	15 (6.8)	32 (14.51)	68 (30.84)
Shipping weight — lbs. (kg)	60 (27.22)	82 (37.19)	168 (76.2)

DB304 BROAD BAND ANTENNA
6.1 or 6.7 dB GAIN, 150-174 MHz

DECIBEL

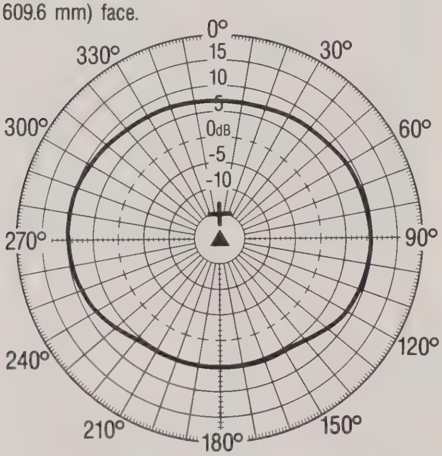
Using dual dipoles for higher gain, the DB304 is a heavy duty, light weight antenna for 150-174 MHz. It mounts to the top or side of a tower and can be adjusted to provide an omni or elliptical horizontal pattern.

The basic antenna is a four-stack colinear array designed to provide broad 10 MHz bandwidth and minimum pattern distortion as well as high gain. A binary VAPOR-BLOC® cable harness insures inphase signal distribution to all radiating elements.

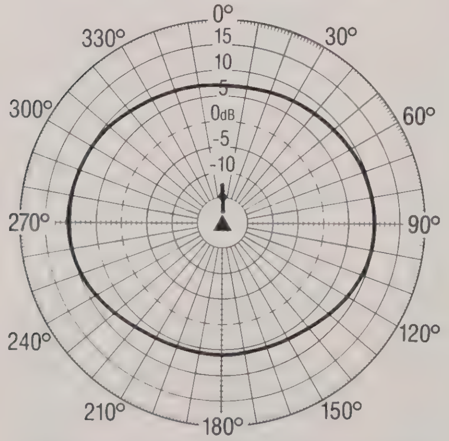


Side Mounting

Typical pattern shape of the antenna side mounted on a tower with an 18″ to 24″ (457.2 mm to 609.6 mm) face.



DB304 (Omni) mounted on side of tower



DB304L with elements pointed toward the tower

Radiation Patterns

When the DB304 has all dual dipoles positioned in line, collinearly, along the mast, an elliptical pattern with 6.7 dB gain is produced. When the two dual dipoles at the top of the antenna are aligned at a 90° angle from the two at the bottom of the mast, an omnidirectional pattern with 6.1 dB gain results.

When top mounted, the omni and elliptical antennas produce similar radiation patterns, but when they are side mounted, the radiation patterns are significantly different. The antenna can be changed from one pattern to the other in the field with ordinary hand tools.

Dual models of the antenna are also available. Each antenna is isolated from the other by 30 dB, and each has a separate feed line terminating at the bottom of the mast. Model DB304D consists of two omnidirectional antennas, each with a gain of 3.2 dB. Model DB304DL has two elliptical-pattern antennas, each with a gain of 3.8 dB. Either antenna can be aligned to provide an omni or elliptical pattern independently of the other.

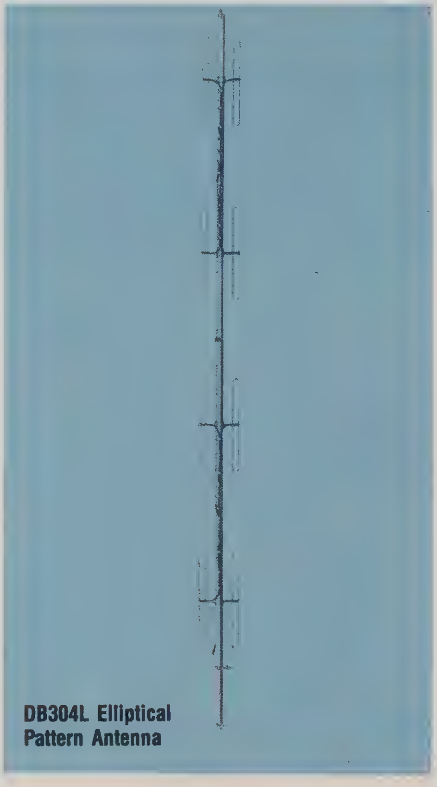
For protection against lightning and static, an aluminum mast with a pointed cap top, which also serves as a hoisting hook, provides a low resistance path to the tower or ground system and all elements operate at DC ground.

For ease in handling, the mast is shipped in two sections. It can be assembled with ordinary hand tools, and the unique center splice assures correct alignment.

Ordering Information

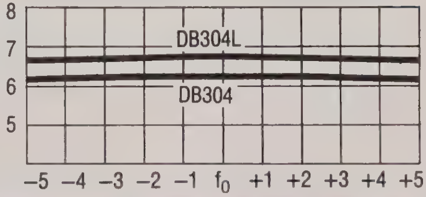
Please specify exact frequency or frequency range. Order DB304 for omni pattern, DB304L for elliptical pattern, DB304D for dual omni or DB304DL for dual elliptical pattern. Mounting clamps, DB365, are included to fit round tower members to 2.75″ (69.85 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps can be special ordered. Order DB5001 Side Mount Kit for side mounting.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.



DB304L Elliptical Pattern Antenna

Antenna Gain-dB vs. Frequency-MHz



Electrical Data

Frequency Ranges — MHz	150-160, 155-165, 164-174
Bandwidth — MHz	10
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	See curves
Maximum power input — watts	500
Vertical beamwidth (half power)	16°
Decoupling between antennas (dual models) — dB	30 maximum
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Mast - upper (aluminum) — in. (mm)	2.5 (63.5) OD with .085 (2.16) wall
Mast - lower (aluminum) — in. (mm)	2.75 (69.85) OD with .120 (3.048) to .205 (5.207) wall
Radiating elements (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	4.85 (.45)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	1718 (237.77)
Wind rating:*	
Survival without ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	74 (119)
Overall length — in. (mm)	260 (6,604)
Shipping length — in. (mm)	144 (3,657)
Net weight (w/clamps) — lbs. (kg)	45 (20.41)
Shipping weight (w/clamps) — lbs. (kg)	65 (29.48)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.

DB314 VHF AND UHF BROAD BAND ANTENNA 3.2/6.6 dB GAIN, 150-160 and 450-470 MHz

DECIBEL

Comprised of two antennas mounted on a common mast, the DB314 is a high gain, heavy duty, light weight antenna for 150-160 and 450-470 MHz. It mounts to the top or the side of a tower and can be phased to provide an omni or elliptical pattern.

The top section of the DB314, with four dual dipole elements, provides 6.6 dB gain and a 20 MHz bandwidth for 450-470 MHz frequencies.

The bottom antenna has two dual dipole elements and provides a 3.2 dB gain and a 10 MHz bandwidth at 150-160 MHz.

Radiation Patterns

Both upper and lower sections of the antenna can be used for omnidirectional and elliptical coverage. When the elements are mounted in line, collinearly, an elliptical pattern is produced. When the elements are rotated 90 degrees from each other, an omni pattern results.

The patterns are changed significantly when the antenna is side mounted, as shown in the pattern diagrams.

Both upper and lower antenna sections are fed and terminated separately at the mounting end of the mast. Water resistant VAPOR-BLOC® cable, a Decibel exclusive, is used in the phasing harnesses.

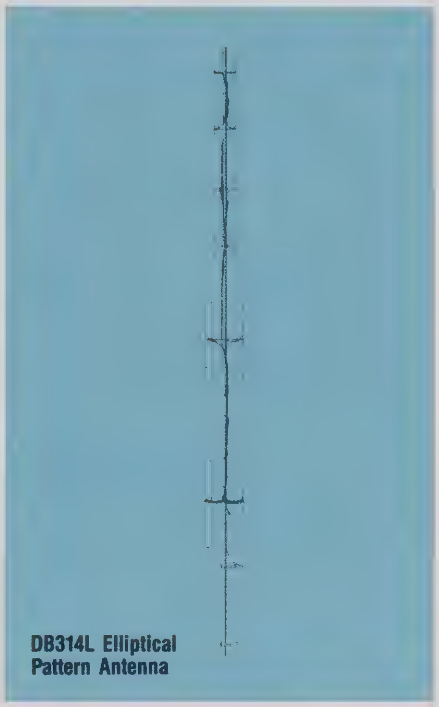
For ease in handling, the mast is shipped in two sections. It can be assembled with ordinary hand tools, and alignment is not a factor since the antenna sections operate independently.

Ordering Information

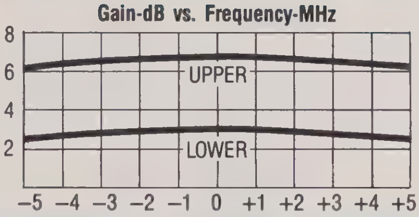
Please specify model and exact frequency or range. Order the DB314 for omni pattern, DB314L for elliptical. Mounting clamps, DB365, are included to fit round tower members to 2.25″ (57.15 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps are available on special order. Order DB5001 Side Mount Kit for side mounting.

Electrical Data

Frequency Ranges — MHz	
Upper section	450-470
Lower section	150-160
Bandwidth — MHz	
Upper section	20
Lower section	10
VSWR	1.5 to 1
Nominal impedance — ohms	50
Gain — dB	See curves
Maximum power input — watts	
Upper section	250
Lower section	500
Vertical beamwidth	
Upper section	14°
Lower section	32°
Lightning protection	Direct ground
Standard Termination (both sections): Captive N-Male attached to flexible lead.	



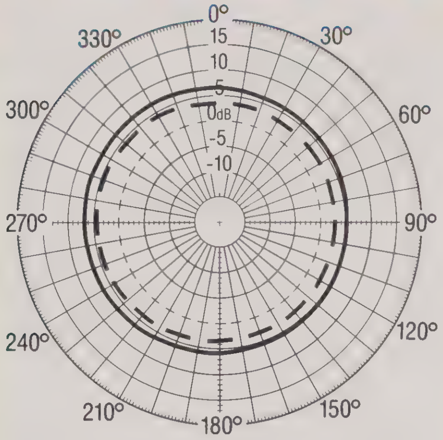
DB314L Elliptical Pattern Antenna



Mechanical Data

Materials:	
Mast - upper section (aluminum) — in. (mm)	1.75 (44.45) OD with .0625 (.159) to .125 (3.18) wall
Mast - lower section (aluminum) — in. (mm)	2 (50.8) OD with .125 (3.18) to .25 (6.35) wall
Radiating elements - upper section (aluminum) — in. (mm)	.375 (9.53) OD with .058 (1.47) wall
Radiating elements - lower section (aluminum) — in. (mm)	.5 (12.7) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	3.3 (.307)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	132 (59.87)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg)	938 (129.82)
Wind rating:*	
Survival without ice — mph (km/hr)	107 (172)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	75 (121)
Overall length — in. (mm)	217 (5,512)
Shipping length — in. (mm)	119 (3,023)
Net weight — lbs. (kg)	37 (16.78)
Shipping weight (w/clamps) — lbs (kg)	54 (24.49)

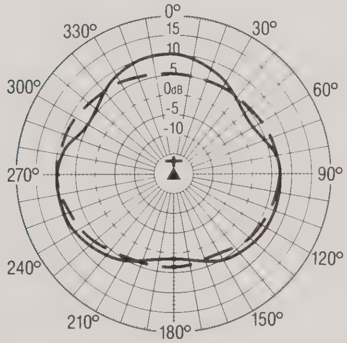
*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.



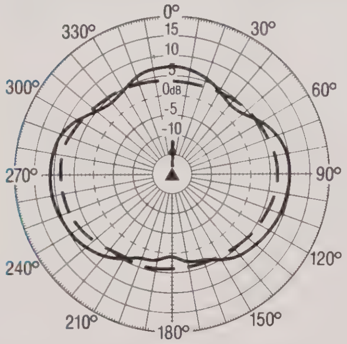
Azimuth radiation pattern of DB314 antenna (—) upper section and (———) lower section.

Side Mounting

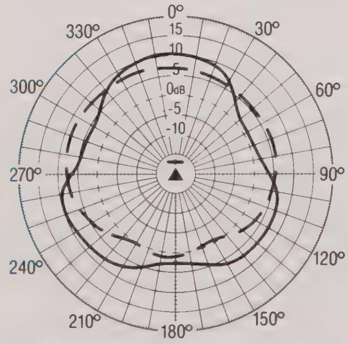
Typical pattern shapes of the antenna side mounted on a tower with an 18″ (457.2 mm) to 24″ (609.6 mm) face. Upper section (—), Lower section (———).



DB314 (Omni) mounted on side of tower



DB314L elements pointed toward tower



DB314L elements broadside to tower

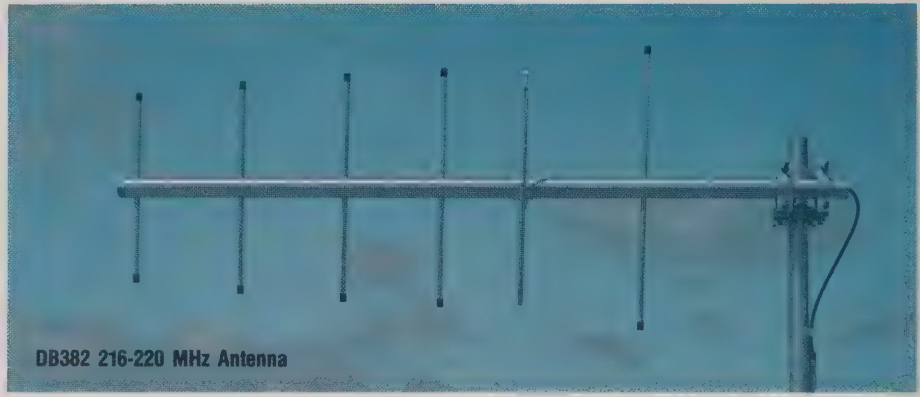
DB382 YAGI ANTENNA 9.5 dB GAIN, 216-220 MHz

DECIBEL

The DB382 is a 6-element Yagi antenna for the 216-220 MHz frequencies. It consists of a reflector, driven element and four directors welded to a common boom. It mounts to the top or side of a tower or wood pole and provides 9.5 dB gain over a narrow pattern.

The driven element is a folded dipole. Gain and VSWR are virtually constant across the band.

The feed is enclosed within the dipole assembly for added protection from ice and snow. All elements are grounded for lightning protection.


DB382 216-220 MHz Antenna

Higher Gain

Two antennas, DB382-2, can be stacked for 12.1 dB gain, four antennas, DB382-4, can be arrayed for 14.7 dB gain, and eight antennas, DB382-8, can be stacked for 17.4 dB gain.. A vertical spacing of .75 to 1.0 wavelengths between antennas is recommended.

Applications

The DB382 has a number of applications:

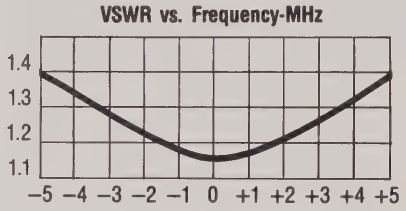
1. In systems that need protection against icing,
2. In point-to-point systems where high gain is required over a narrow sector,
3. In systems that need to reduce interference on the side or backside.

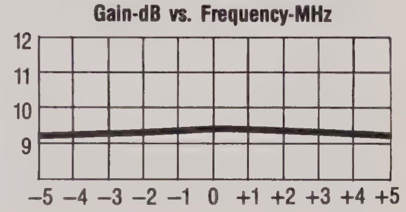
The DB382 is a rugged antenna designed for severe environments. The boom, dipole and elements are made of high strength aluminum alloys. The dipole and other elements are made of .75″ (19.05 mm) tubing, and brackets and hardware are galvanized steel.

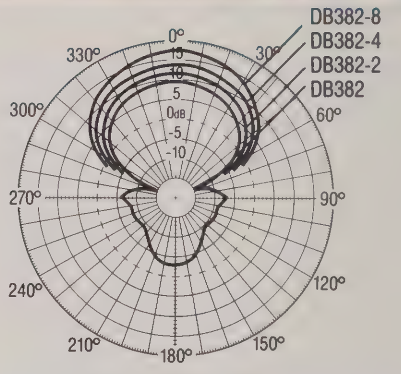
No field tuning is required, the antenna is assembled and welded for minimum VSWR at the factory.

Ordering Information

Please specify frequency and termination if non-standard. Order DB382 for 9.5 dB gain, DB382-2 for 12.1 dB gain, DB382-4 for 14.7 dB gain or DB382-8 for 17.4 dB gain. Brackets, harnesses and clamps are included to fit round members to 3″ (76.2 mm) OD and angle members to 2″ (50.8 mm). Other size clamps are available on request. Contact Decibel Systems Engineering for other special requirements in the 200-225 MHz frequencies.







Horizontal radiation patterns

Electrical Data	
Frequency Range — MHz	216-220
Bandwidth — MHz	4
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	9.5
Polarization	Vertical
Maximum power input — watts	350
Vertical beamwidth of single antenna (half power)	50°
Horizontal pattern of beamwidth of single antenna (half power)	62°
Front to back ratio — dB	15
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

	DB382	DB382-2	DB382-4	DB382-8
Materials:				
Support boom (aluminum) — in. (mm)	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall	1.5 (38.1)×2 (50.8) with .078 (1.98) wall
Elements (welded aluminum) — in. (mm)	.75 (19.05) dia.	.75 (19.05) dia.	.75 (19.05) dia.	.75 (19.05) dia.
Dipole (welded aluminum) — in. (mm)	.625 (15.88) dia.	.625 (15.88) dia.	.625 (15.88) dia.	.625 (15.88) dia.
Mounting brackets	Galvanized steel	Galvanized steel	Galvanized steel	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.8 (.167)	3.6 (.335)	7.2 (.669)	14.4 (1.33)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	72 (32.66)	144 (65.32)	288 (130.63)	576 (261.27)
Wind rating:				
Survival without ice — mph (km/hr)	100 (161)	100 (161)	100 (161)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (113)	70 (113)	70 (113)	70 (113)
Height — in. (mm) (when stacked vertically)	38 (965.2)	110 (2,794)	254 (6,452)	510 (12,954)
Overall length — in. (mm)	84 (2,134)	84 (2,134)	84 (2,134)	84 (2,134)
Net weight — lbs. (kg)	15 (6.8)	32 (14.51)	68 (30.84)	136 (61.69)
Shipping weight — lbs. (kg)	60 (27.22)	82 (37.19)	168 (76.2)	340 (154.2)

DB404 BROAD BAND ANTENNA
3.8 or 5 dB GAIN, 406-512 MHz

DECIBEL

An extremely rugged antenna that can survive winds to 125 mph (201 km/hr), the DB404 provides a broad bandwidth from 14 to 24 MHz in the 406-512 MHz frequencies. It can be mounted to the top or side of a tower.

The broad bandwidth feature makes the DB404 ideal for duplex operation. Also, it allows the antenna to be ordered in advance of frequency assignment.

Radiation Patterns

The DB404 has two stacks of unique dual dipole radiating elements, which are designed to improve collinearity and efficiency of the array. A binary cable harness, protected by VAPOR-BLOC®, insures equal inphase signal distribution to all elements.

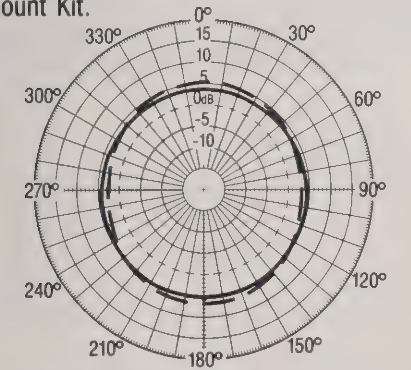
When the dual dipoles are mounted in line, collinearly, on the mast, the antenna produces an elliptical pattern with 5.0 dB gain. When the top dual dipoles are positioned at a 90° angle from the bottom elements, an omnidirectional pattern results with 3.8 dB gain. The patterns can be changed in the field with ordinary hand tools.

The patterns are changed significantly when the antenna is side mounted, as shown in the pattern diagrams.

The antenna is almost immune to lightning damage because it is metal and all elements operate at DC ground.

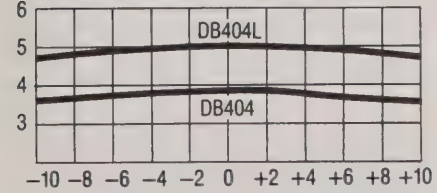
Ordering Information

Please specify frequency or frequency range. Order DB404 for an omni pattern with 3.8 dB gain, DB404L for an elliptical pattern with 5.0 dB gain. DB365 Mounting Clamps are included to fit round members up to 2.75″ (69.85 mm) OD, angle members up to 2″ (50.8 mm). For side mounting, order DB5007 Side Mount Kit.



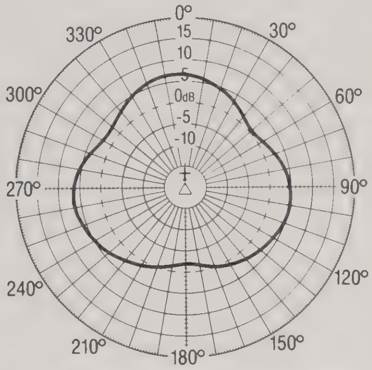
Horizontal radiation pattern of DB404 (—) and DB410L (— — —).

Gain-dB vs. Frequency-MHz

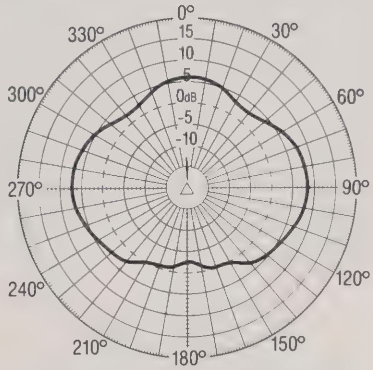


Side Mounted

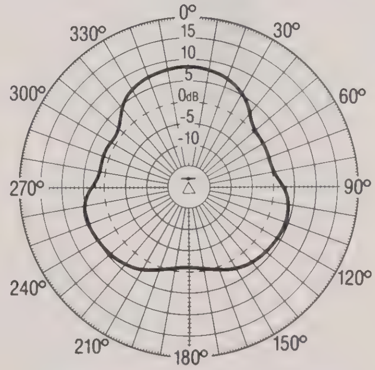
Typical pattern shape of the antenna side mounted on a tower with an 18″ (457.2 mm) face. The patterns for 12″ (304.8 mm) and 24″ (609.6 mm) towers will be similar.



DB404 (Omni) mounted on side of tower



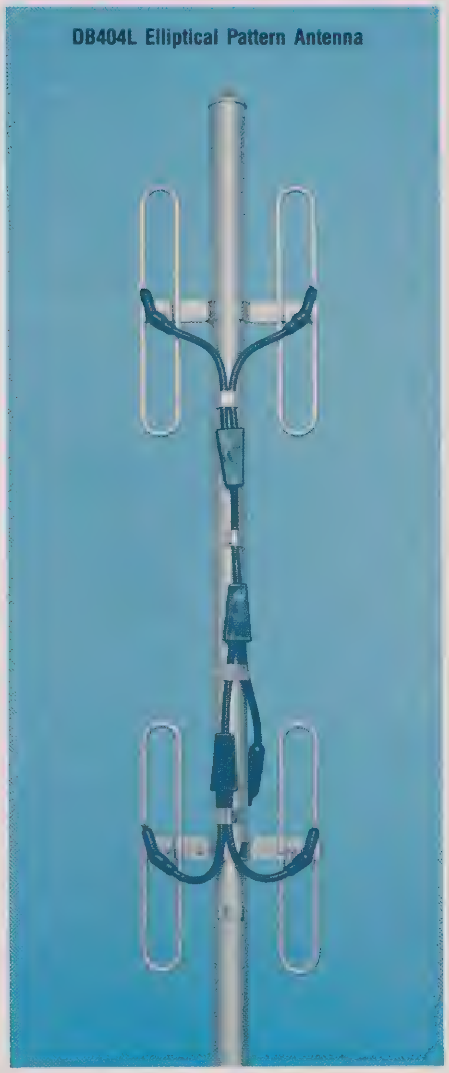
DB404L elements pointed toward tower



DB404L elements broadside to tower

Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488, 482-494, 488-512
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	See curves
Rated power input — watts	250
Vertical beamwidth (half power)	27°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	


DB404L Elliptical Pattern Antenna

Mechanical Data

Materials:	
Mast (aluminum) — in. (mm)	1.75 (44.45) OD with .062 (1.575) to .125 (3.175) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.525) OD with .058 (1.473) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.14 (28.96)
Wind rating:	
Survival without ice — mph (km/hr)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	over 125 (201)
For 3 dB degradation — mph (km/hr)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	45.5 (20.64)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	62 (8.58)
Overall length (450-470 MHz) — ft. (m)	5 (1.52)
Net weight (w/clamps) — lbs. (kg)	14 (6.35)
Shipping weight (w/clamps) — lbs (kg)	24 (10.89)

NOTE: The mechanical specifications are slightly degraded for the antenna covering the 406-420 MHz band.

DB408 BROAD BAND ANTENNA
6.6 or 7.8 dB GAIN, 406-512 MHz

DECIBEL

The DB408 combines two DB404 antennas on the same mast to provide higher gain. Like the DB404, it is an extremely rugged antenna that can survive winds to 125 mph (201 km/hr). It provides a broad bandwidth of 14 to 24 MHz in the 406-512 MHz frequencies. It mounts to the tower top or side.

The broad bandwidth feature makes the DB408 ideal for duplex operation. Also, it allows the antenna to be ordered in advance of frequency assignment.

Radiation Patterns

The DB408 has four stacks of unique dual dipole radiation elements, designed to improve collinearity and efficiency of the array. A binary cable harness insures equal inphase signal distribution to all elements.

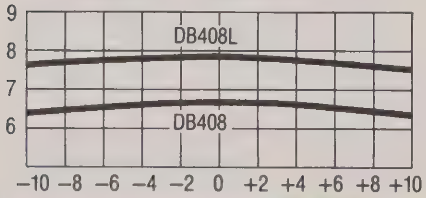
When all dual dipoles are mounted in line, collinearly, on the mast, the antenna produces an elliptical pattern with 7.8 dB gain. When alternate dual dipoles are positioned at a 90° angle from each other, an omnidirectional pattern results with 6.6 dB gain. The pattern can be changed in the field with hand tools.

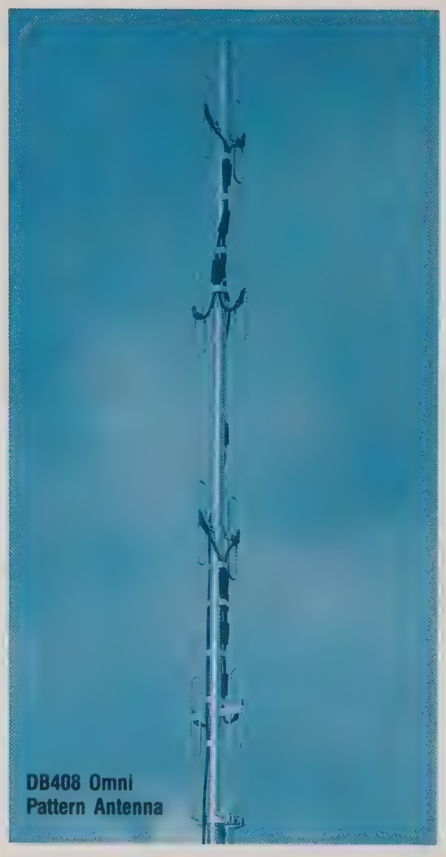
The DB408 can also function as two independent antennas on a common mast. The elements can be positioned to produce either an omni or elliptical pattern, without regard to the other antenna.

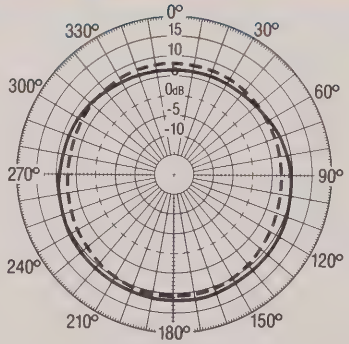
Ordering Information

Please specify exact frequency or range. Order DB408 for an omni pattern with 6.6 dB gain, DB408L for an elliptical pattern with 7.8 dB gain, DB408D for a dual omni pattern, or DB408DL for a dual elliptical pattern. Mounting clamps are included to fit round members up to 2.75″ (69.85 mm) OD, angle members up to 2″ (50.8 mm). Other size clamps can be special ordered. For side mounting, order DB5012 Side Mounting Kit.

Gain-dB vs. Frequency-MHz



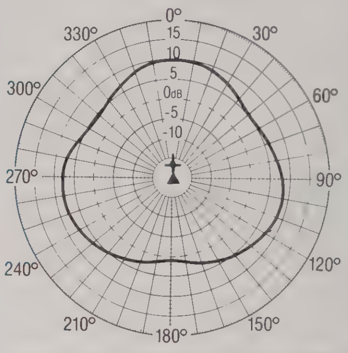

DB408 Omni Pattern Antenna



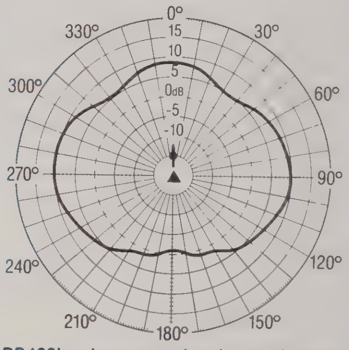
Horizontal radiation pattern of DB408 (—) and DB408L (– – –).

Side Mounting

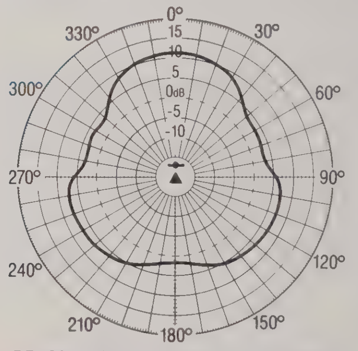
Patterns are typical of the antenna side mounted on a tower with an 18″ (457.2 mm) face. Patterns for 12″ (304.8 mm) and 24″ (609.6 mm) towers will be similar.



DB408 (Omni) mounted on side of tower



DB408L, elements pointed toward tower



DB408L, elements broadside to tower

Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488, 482-494, 488-512
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	See curves
Rated power input — watts	250
Vertical bandwidth (half power)	14°
Decoupling between antennas (dual) — dB	30 minimum
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

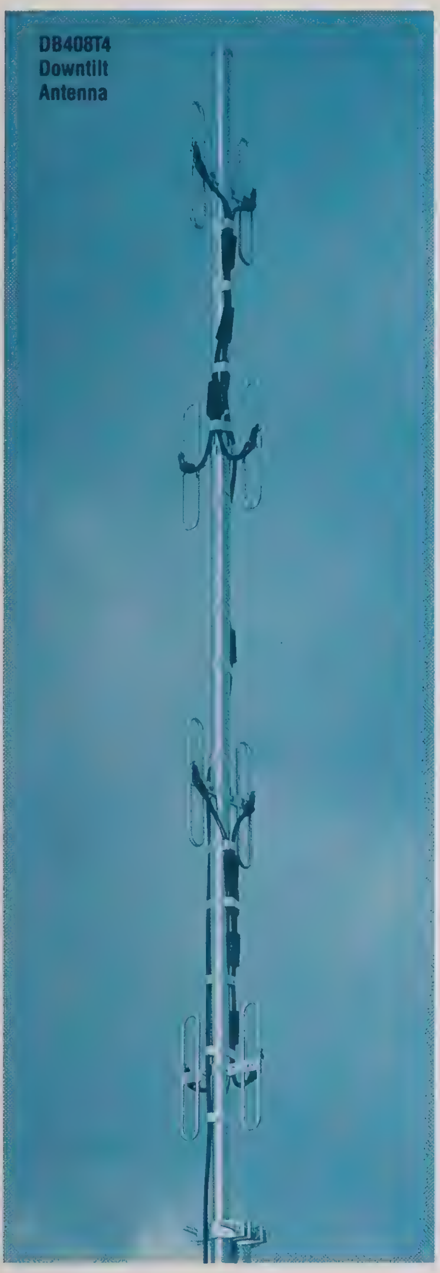
Mechanical Data

Materials:	
Mast (aluminum) — in. (mm)	1.75 (44.45) OD with .0625 (1.588) to .125 (3.175) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.525) OD with .058 (1.473) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.9 (.177)
Wind rating:*	
Survival without ice — mph (km/hr)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	85 (137)
For 3 dB degradation — mph (km/hr)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	75.5 (34.25)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	250 (34.6)
Overall length (450-470 MHz) — ft. (m)	9.42 (2.87)
Net weight (w/clamps) — lbs. (kg)	17 (7.71)
Shipping weight (w/clamps) — lbs. (kg)	29 (13.15)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted.
NOTE: The mechanical specifications are slightly degraded for the antenna covering 406-420 MHz.

DB408T DOWNTILT BROAD BAND ANTENNA 5.5 to 7.7 dB GAIN, 406-512 MHz

DECIBEL



The DB408T provides 4.5° or 9° downtilt in omni or elliptical radiation patterns. It mounts to the top of a tower or structure and can withstand winds to 125 mph (201 km/hr).

The DB408T produces a broad bandwidth of 14 to 24 MHz in the 406-512 MHz frequencies, and provides either 5 dBd on the horizon (4.5° tilt) or 0 dBd on the horizon (9° tilt).

It is ideal for use in mobile systems that require maximum signal strength close to the antenna. It can be used on tall towers, buildings or mountain top locations to direct the signal into the targeted area.

Radiation Patterns

The DB408T has four stacks of dual dipoles, and a binary cable harness, protected by VAPOR-BLOC®, assures the proper phase and signal to each radiator for the desired downtilt angle.

When the dipoles are mounted in line, collinearly, on the mast, the antenna produces an elliptical pattern with 6.7 dB gain on the horizon at 4.5° downtilt, or 1.2 dB at 9° downtilt.

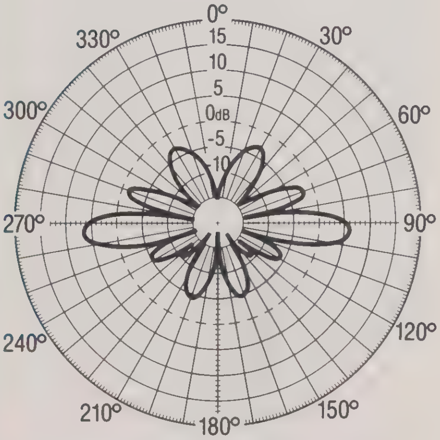
When the dipoles are alligned alternately at 90° from each other, an omnidirectional pattern is produced. See Electrical Data for gain. The pattern can be changed in the field with common hand tools.

The antenna is almost immune to lightning because it is made of metal and all elements operate at DC ground.

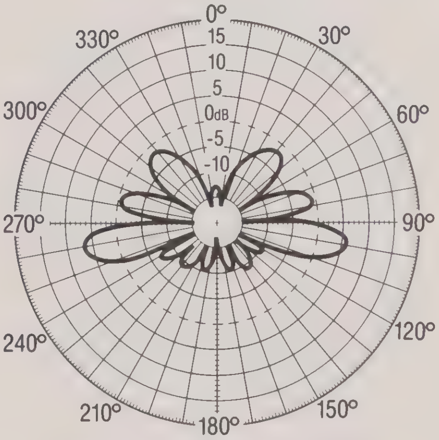
Ordering Information

Please specify exact frequency or range. Order DB408T4 for omni pattern with 4.5° downtilt, DB408LT4 for elliptical pattern with 4.5° downtilt, DB408T9 for omni pattern with 9° downtilt, or DB408LT9 for elliptical pattern with 9° downtilt. Mounting clamps, DB365, are included to fit round members up to 2.75″ (69.85 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps can be special ordered.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.



Elevation radiation pattern of DB408T4



Elevation radiation pattern of DB408T9

Electrical Data

Frequency Ranges — MHz	406-420 Special, 450-470, 470-488, 488-512
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) at 0° elevation angle (horizon) — dB	
DB408T4 (4.5° downtilt, Omni)	5.5
DB408LT4 (4.5° downtilt, elliptical)	6.7
DB408T9 (9° downtilt, Omni)	0
DB408LT9 (9° downtilt, elliptical)	1.2
Gain (over half-wave dipole) — dB	
DB408T4 (−4.5° elevation angle)	6.5
DB408LT4 (−4.5° elevation angle)	7.7
DB408T9 (−9° elevation angle)	6.0
DB408LT9 (−9° elevation angle)	7.2
Rated power input - watts	250
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Mast (aluminum) — in. (mm)	1.75 (44.45) OD with .062 (1.575) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.525) OD with .058 (1.473) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.9 (.177)
Wind rating:	
Survival without ice — mph (km/hr)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	85 (137)
For 3 dB degradation — mph (km/hr)	over 125 (201)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	75.5 (34.25)
Bending moment at top clamp at 100 mph (161 km/hr) — lbs (kg)	250 (113.4)
Overall length (450-470 MHz) — ft. (m)	9.42 (2.87)
Net weight (w/clamps) — lbs. (kg)	17 (7.71)
Shipping weight (w/clamps) — lbs (kg)	29 (13.15)

DB411 OFFSET PATTERN ANTENNA
9 dB GAIN, 406-512 MHz

DECIBEL

The DB411 provides high gain and constant performance over a broad offset horizontal pattern, produced by four folded dipole elements.

It mounts to the top or side of a tower. See diagrams for significant pattern changes when side mounted.

The antenna is ideally suited for mobile systems requiring additional gain over a sector, or along a coast or area with geographical boundaries.

Design and Construction

The DB411 has a 4-stack collinear array with all elements attached along one side of the mast. A binary cable harness assures inphase signal distribution to all radiating elements. VAPOR-BLOC® cables, a Decibel exclusive, are moisture resistant.

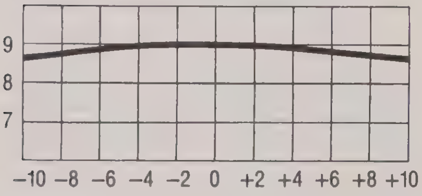
Four models, each with a bandwidth of approximately 20 MHz, cover the 406-420 and 450-512 MHz bands. Gain and VSWR are constant across the band, which permits the antenna to give optimum performance in single or multi-frequency systems.

The mast and elements are made of high strength aluminum alloys, which offer a low resistance discharge path to the tower or ground system for lightning protection.

Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order DB411 offset pattern antenna. Mounting clamps, DB365, are included to fit round tower members up to 2.75″ (69.85 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps can be special ordered. For side mounting, order DB5012 Side Mount Kit.

Gain-dB vs. Frequency-MHz



Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488 and 488-512 Special
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	See curve
Rated power input — watts	250
Vertical beamwidth (half power)	14°
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

DB411 Offset Pattern Antenna

Mechanical Data

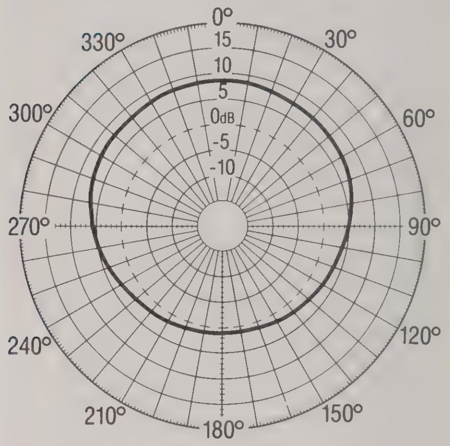
Materials:	
Mast (aluminum) — in. (mm)	1.75 (44.45) OD with .062 (1.575) to .125 (3.175) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.525) OD with .058 (1.473) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.5 (.139)
Wind rating:*	
Survival without ice — mph (km/hr)	over 125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	112 (180)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	60 (27.22)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	170 (23.53)
Overall length (450-470 MHz) — ft. (m)	9.42 (2.87)
Net weight (w/clamps) — lbs. (kg)	25 (11.34)
Shipping weight — lbs. (kg)	27 (12.25)

*Antenna mounted at top of tower. Rating is substantially increased when antenna is side mounted.

NOTE: The mechanical specifications are slightly degraded for the antenna covering the 406-420 MHz band.

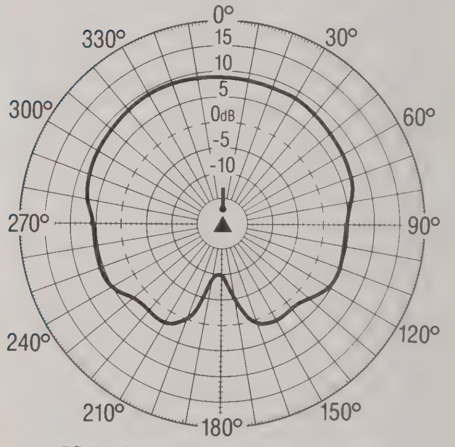
Top Mounting

Horizontal radiation pattern of DB411.

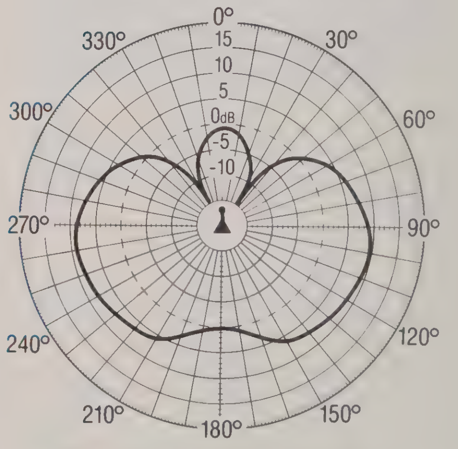


Side Mounting

Typical pattern shape of the antenna side mounted on a tower with an 18″ (457.2 mm) face. The patterns for 12″ (304.8 mm) and 24″ (609.6 mm) towers will be similar.



DB411 elements pointed away from tower



DB411 elements pointed toward tower

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

DB413 OFFSET PATTERN ANTENNA 12 dB GAIN, 406-512 MHz

DECIBEL

The DB413 provides 12 dB gain and constant performance over a broad offset horizontal pattern, produced by eight folded dipole elements.

It mounts to the top or side of a tower. See diagrams for significant pattern changes when side mounted.

The antenna is ideally suited for mobile systems requiring additional gain over a sector, or along a coast or area with geographic boundaries.

Design and Construction

The DB413 has an 8-stack collinear array with all elements permanently attached along one side of the mast. A binary cable harness assures inphase signal distribution to all radiating elements. VAPOR-BLOC® cable, a Decibel exclusive, is moisture resistant.

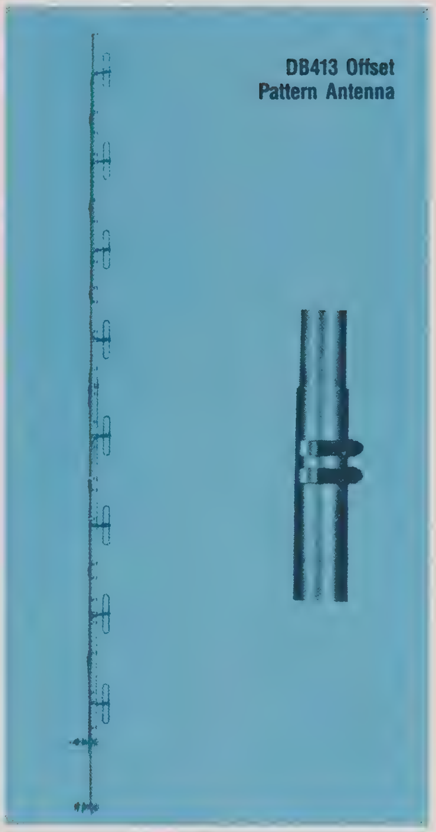
Four models, each with a bandwidth of approximately 20 MHz, cover the 406-420 and 450-512 MHz bands. Gain and VSWR are virtually constant across the band, which permits the antenna to give optimum performance in single or multi-frequency systems.

The mast and elements are made of high strength aluminum alloys, which offer a low resistance discharge path to the tower or ground system for lightning protection.

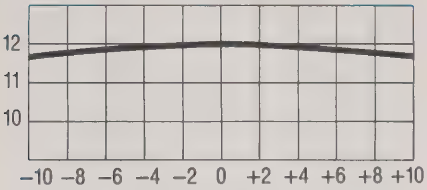
For ease in handling, the mast is shipped in two sections, which can be assembled with ordinary hand tools. A unique center splice assures proper alignment.

Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order DB413 for 12 dB offset pattern antenna, or DB413D for dual antennas. Mounting clamps, DB365, are included to fit round tower members up to 2.75″ (69.85 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps can be special ordered. For side mounting, order DB5012 Side Mount Kit.

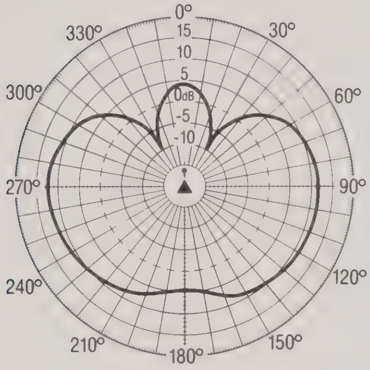

DB413 Offset Pattern Antenna

Gain-dB vs. Frequency-MHz

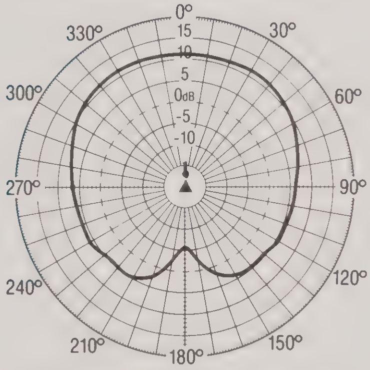


Side Mounting

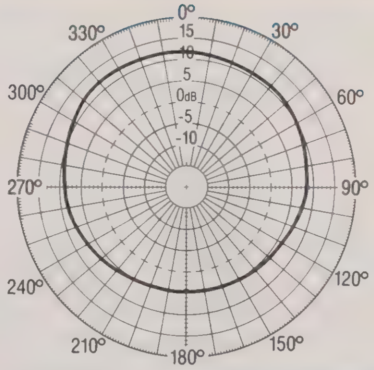
Typical pattern shape of the antenna side mounted on a tower with an 18″ (457.2 mm) face. The patterns for 12″ (304.8 mm) and 24″ (609.6 mm) towers will be similar.



DB413 elements pointed toward tower



DB413 elements pointed away from tower



Top Mounting

Horizontal radiation pattern of DB413

Electrical Data

Frequency Ranges — MHz	406-420 Special, 450-470, 470-488 Special, 488-512 Special
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	See curve
Rated power input — watts	250
Vertical beamwidth (half power points)	7°
Decoupling between antennas (dual) — dB	35
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Mast upper (aluminum) — in. (mm)	1.75 (44.45) OD with .125 (3.175) wall
Mast lower (aluminum) — in. (mm)	2 (50.8) OD with .125 (3.175) to .75 (19.05) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.525) OD with .058 (1.473) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	2.55 (.237)
Wind rating:*	
Survival without ice — mph (km/hr)	122 (196)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	90 (145)
For 3 dB degradation — mph (km/hr)	76 (122)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	102 (46.27)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs (kg m)	615 (85.116)
Overall length (450-470 MHz) — ft. (m)	18.33 (5.59)
Net weight (w/clamps) — lbs. (kg)	32 (14.51)
Shipping weight (w/clamps) — lbs. (kg)	60 (27.22)

*Antenna mounted at top of tower. Rating is substantially increased when antenna is side mounted with appropriate mounting kit.

DB420 BROAD BAND ANTENNA
9.2 or 10.4 dB GAIN, 406-512 MHz

DECIBEL

With an array of eight dual dipole elements, the DB420 provides high gain and constant performance across a broad omni or elliptical band. It mounts to the top or side of a tower.

Extremely rugged, the antenna will survive winds to 100 mph (161 km/hr). It is virtually immune to lightning damage because it is made of metal and all elements operate at DC ground.

Radiation Patterns

When the dual dipole elements are mounted with the top four at a 90° angle to the four at the bottom, an omnidirectional pattern with 9.2 dB gain is produced. When all elements are mounted in line, collinearly, on the mast, an elliptical pattern with 10.4 dB results. The pattern can be changed in the field with ordinary hand tools.

A binary cable harness assures equal inphase signal distribution to all elements.

Four models, each with a bandwidth of approximately 20 MHz, cover the 406-420 and 450-512 MHz bands. Gain and VSWR are virtually constant across the band, which permits the antenna to give optimum performance in single or multi-frequency systems.

Dual and quad models of the DB420 are also available with independent antennas on a common mast, each with a separate feed line. Model DB420D consists of two DB408 type antennas, DB420DL two DB408L type antennas, DB420Q four DB404 type antennas, and DB420QL four DB404L type antennas.

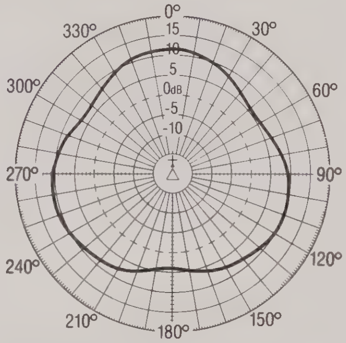
The elements of dual and quad antennas can be aligned to produce either an omni or elliptical pattern, each without regard to other antennas on the mast.

Ordering Information

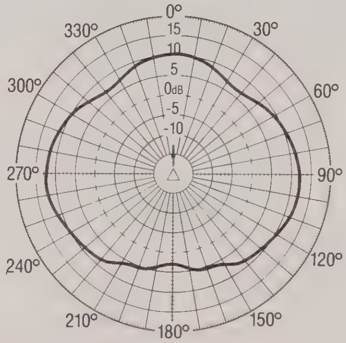
Please specify exact frequency or range. Order the DB420 omni, DB420L elliptical, DB420D dual omni, DB420DL dual elliptical, DB420Q quad omni, or DB420QL quad elliptical. Mounting clamps are included to fit round tower members to 2.75″ (69.85 mm) OD, angle members up to 2.5″ (63.5 mm). Other size clamps can be special ordered. For side mounting order DB5012 Side Mount Kit.

Side Mounting

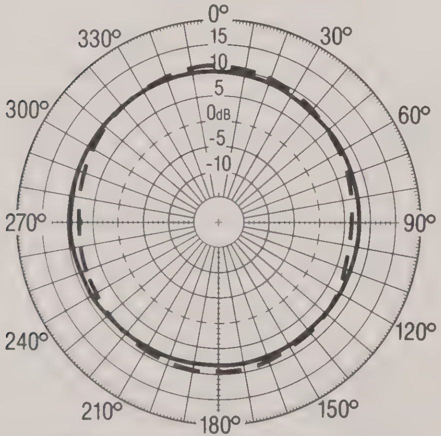
The DB420 and DB420L patterns indicate the typical pattern shape of the antenna side mounted on a tower with an 18″ (457.2 mm) face. The patterns for 12″ (304.8 mm) and 24″ (609.6 mm) towers will be similar.



DB420 (Omni) mounted on side of tower.

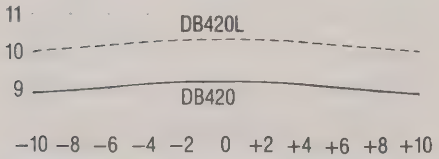


DB420L elements pointed toward tower.

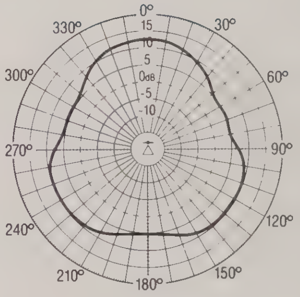


Horizontal Radiation Pattern DB420(—) and DB402L(– – –).

Gain-dB vs. Frequency-MHz



DB420 Omni Pattern Antenna



DB420L elements broadside to tower.

Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488, 488-512
Bandwidth — MHz	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole)	See curves
Rated power input — watts	250
Vertical beamwidth (half power points)	7°
Decoupling between antennas (dual and quad models) — dB	30 minimum
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of a flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Mast — upper (aluminum) — in. (mm)	1.75 (44.45) OD with .0625 to .125 (1.59 to 3.18) wall
Mast — lower (aluminum) — in. (mm)	2 (50.8) OD with .125 to .25 (3.18 to 6.35) wall
Radiating elements (aluminum) — in. (mm)	.375 (9.53) OD with .058 (1.47) wall
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	3.33 (.309)
Wind rating:*	
Survival w/o ice — mph (km/hr)	100 (161)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	70 (112.65)
For 3 dB degradation — mph (km/hr)	60 (96.56)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	916 (126.77)
Overall length (450-470 MHz) — ft. (m)	18.08 (5.51)
Net weight (w/clamps) — lbs. (kg)	34 (15.42)
Shipping weight (w/clamps) — lbs. (kg)	58 (26.31)

*Top mounted antenna. Wind rating is greatly increased when antenna is side mounted with appropriate side mount kit.

NOTE: The mechanical specifications are slightly degraded for the antenna covering the 406-420 MHz band.

DB426 HEAVY DUTY BROAD BAND ANTENNA
6 dB GAIN, 450-470 MHz

DECIBEL

Designed to survive winds to 150 mph (241 km/hr), the DB426 is a heavy duty antenna that provides virtually constant VSWR and high gain across the 450-470 MHz band, with no pattern tilt!

It can be mounted to the top or side of a tower. For lightning protection a .75″ (19.05 mm) brass tube extends from top to bottom of the antenna, with provisions for grounding.

Design and Construction

The DB426 is a FULL WAVE DIPOLE* (FWD™) collinear array. It is housed in a single length of drawn fiberglass tube with .25″ (6.35 mm) walls. Unique radiation elements, with fewer parts, are enclosed to provide more reliability and less tower loading. Maximum top tip deflection in winds of 100 mph (161 km/hr) is only 1.26°.

To reduce intermodulation product generation in the system, all metals used in the antenna's radiators, feed and matching system are copper or brass.

DB426 terminates in a N-Female connector at the bottom. Flexible braided pigtails are not recommended, and to reduce intermod interference, a short length of HELIAX® with type N connectors on each end is supplied.

Because of the narrow vertical beamwidth of high gain antennas such as the DB426, it is important that the antenna be straight and plumb when mounted.

Ordering Information

Order the DB426 6 dB gain omnidirectional antenna. Mounting clamps, DB365, are included. For side mounting, order DB5007 Side Mount Kit.

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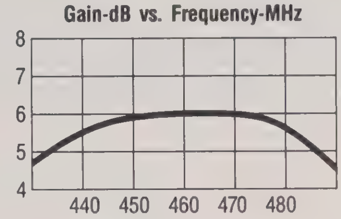
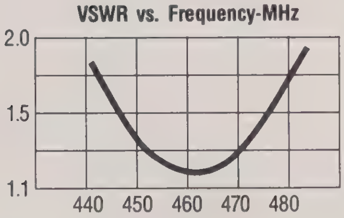
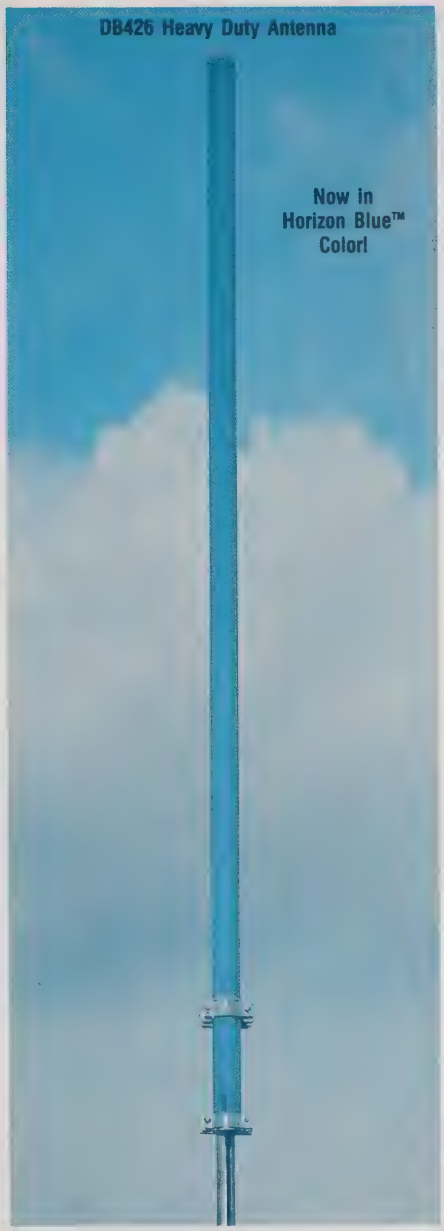
*Full Wave Dipole is protected by patent.
HELIAX is a registered trademark of Andrew Corporation.







Now in Horizon Blue™ Color!

Electrical Data	
Frequency Range — MHz	450-470
Bandwidth — MHz	20
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Gain (over half-wave dipole) — dB	6
Rated power input — watts	500
Vertical beamwidth (half power)	18°
Lightning protection	Direct ground
Standard termination	N-Female (Fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data	
Materials:	
Radome (fiberglass) — in. (mm)	3 (76.2) OD with .25 (6.35) wall
Radiating elements	Brass
Mounting clamps	DB365
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.55 (.144)
Wind rating:	
Survival without ice — mph (km/hr)	greater than 150 (241)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	greater than 150 (241)
Lateral thrust for 3 dB degradation at 100 mph (161 km/hr) — lbs. (kg)	60 (27.22)
Bending moment at top clamp at 100 mph (161 km/hr) — ft. lbs. (kg m)	224 (31)
Overall length — in. (mm)	112 (2,845)
Net weight (w/clamps) — lbs. (kg)	30 (13.61)
Shipping weight (w/clamps) — lbs. (kg)	40 (18.14)

DECIBEL

DB432 DIRECTIONAL YAGI ANTENNA 8 dB GAIN, 450-512 MHz

A light duty Yagi, the DB432 antenna is made for 450-512 MHz and is excellent for control or point-to-point communications. It is also well suited for temporary or portable use.

Design and Construction

All components used in the support boom and elements are made of high strength aluminum alloys, mounting bracket and hardware components of galvanized or stainless steel.

A unique mounting arrangement permits rapid azimuth orientation.

Each antenna is assembled and checked for minimum VSWR at the factory. No field pruning or adjustment is required.

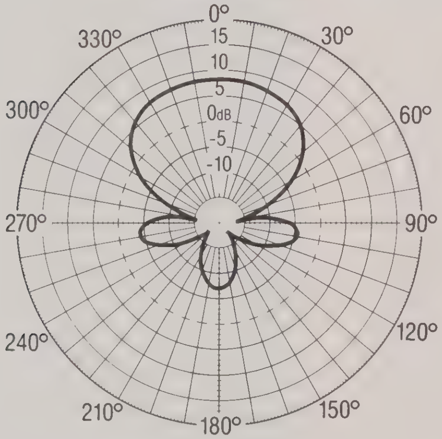
Lightning protection is provided by direct ground.

Ordering Information

Please specify exact frequency or range. Order the DB432 8 dB gain Yagi for 450-512 or 470-512 MHz. Mounting clamp is included.

DB432 8 dB Gain Antenna

Azimuth Pattern



Electrical Data	
Frequency Ranges — MHz	
DB432	450-470, 470-512
Bandwidth — MHz	20
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	8
Polarization	Vertical
Maximum power input — watts	100
Lightning protection	Direct ground
Standard Termination	Captive Type N-Female

Mechanical Data	
Materials:	
Support boom	Aluminum
Elements	Aluminum
Mounting brackets	Galvanized steel
Dimensions (H×L) — in. (mm)	36 (914.4)×14 (355.6)
Net weight — lbs. (kg)	5 (2.27)
Shipping weight — lbs. (kg)	8 (3.63)

DB436, DB437 DB438 DIRECTIONAL ANTENNAS 10 dB GAIN, 406-512 MHz

DECIBEL

Heavy duty Yagis, these antennas are designed to give highly directional coverage and high front-to-back ratios. All provide 10 dB gain in the 406-512 MHz bands. Broad bandwidths cover from 14 to 24 MHz.

A unique mounting arrangement permits either vertical or horizontal polarization as well as rapid azimuth orientation.

Design and Construction

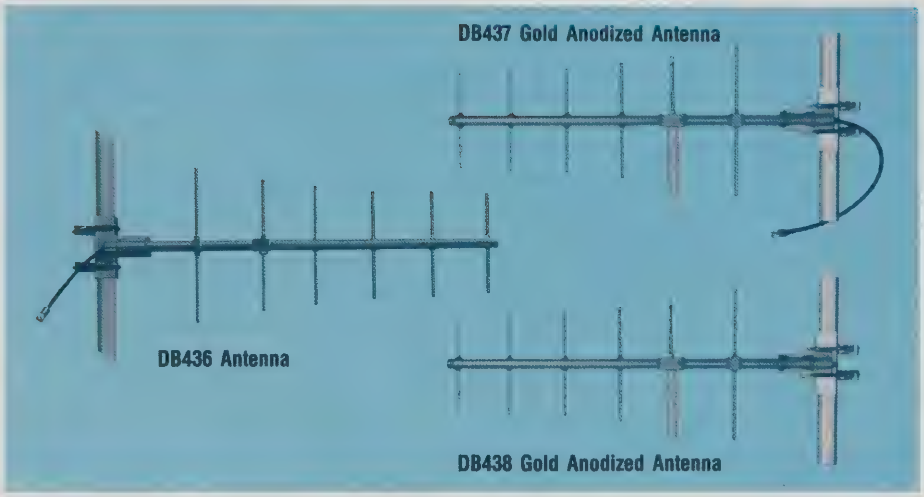
The DB436 is made of high strength welded aluminum alloys, except mounting brackets and hardware components which are of galvanized or stainless steel. The unique design of the enclosed feed assures protection from moisture.

DB437 is made the same as the DB436 except that all the aluminum is protected by a gold anodized finish. A radome covers the radiator to prevent corrosion and ice build up.

The DB438 is the same as the DB437 except that the connector is boom-mounted, not pigtailed.

Additional gain can be achieved by stacking these antennas in dual or quad arrays. Interconnecting harnesses are included. Gain increases 3 dB for two antennas, 6 dB for four.

Stacked models can be used for vertical or horizontal polarization, and can be mounted vertically or side-by-side (with the DB5009 Mounting Bracket). A vertical spacing of one wavelength is recommended between antennas. If desired, the dual and quad models can be mounted with the antennas on opposite sides of the tower to achieve a bi-directional pattern.

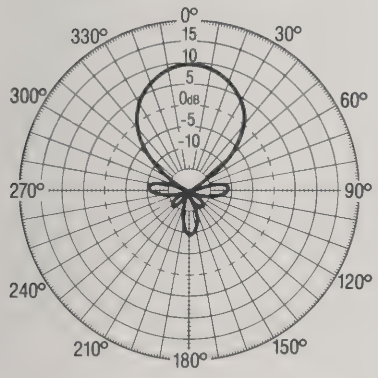


Ordering Information

Please specify exact frequency or range and termination if non-standard. Order single, dual or quad models as follows: DB436, DB437, DB438 single antennas; DB436-2, DB437-2, DB438-2 2-antenna array; or DB436-4, DB437-4, DB438-4 4-antenna array.

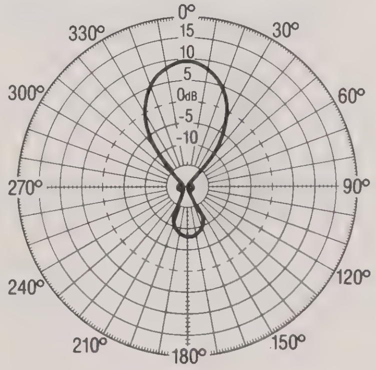
Order DB5009 Mounting Bracket for side-by-side mounting, DB5018 Mounting Bracket for quad mounting. Mounting clamps are included to fit round members up to 3″ (76.2 mm) OD, angle members up to 2″ (50.8 mm). Other size clamps can be special ordered.

DB436, DB437, DB438



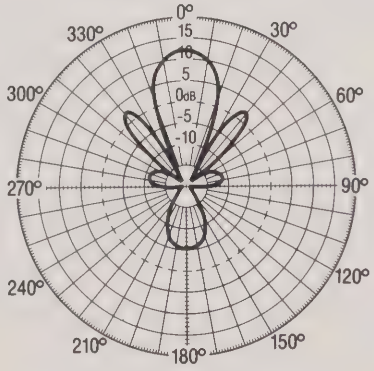
Horizontal Pattern, Vertical Polarization

DB436, DB437, DB438



Horizontal Pattern, Horizontal Polarization

DB436-2, DB437-2, DB438-2



Horizontal Pattern, Horizontal Polarization

Electrical Data	
Frequency Ranges — MHz	A = 406-420, B = 425-445, C = 450-470, D = 470-494, E = 488-512
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	10
Polarization	Vertical or horizontal
Maximum power input — watts	250
Vertical beamwidth (half power)	30°
Horizontal beamwidth (half power)	40°
Front-to-back ratio — dB	18
Lightning protection	Direct ground
Standard Termination: Captive Type N-Female on DB438. DB436 and DB437 have Type N-Male.	

Mechanical Data	
Materials:	
Support boom (aluminum) — in. (mm)	1 (25.4) OD with .083 (2.108) wall
Elements	Aluminum
Mounting brackets	Galvanized steel
Mounting clamps	Stainless steel V-bolts
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	.45 (.042) single, .90 (.084)-2, 1.8 (.167)-4
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	18 (8.16) single, 36 (16.33)-2, 72 (32.66)-4
Wind rating:	
Survival without ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	90 (145)
Dimensions (H×L) — in. (mm)	14.5 (368.3)×35 (889) single, 40 (101.6)×35 (889)-2, 90 (2,286)×35 (889)-4
Net weight — lbs. (kg)	7 (3.18) single, 15 (6.8)-2, 30 (13.61)-4
Shipping weight — lbs. (kg)	10 (4.54) single, 21 (9.53)-2, 42 (19.05)-4
Can be shipped by UPS.	

DB506W DB506WB OMNIDIRECTIONAL ANTENNA 5.25 dBd GAIN, 150-174 MHz

These are 5.25 dBd gain omnidirectional VHF antennas for aviation and land mobile radio, with radiators enclosed in Decibel's Aeroglas™ fiberglass radome in Horizon Blue™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The antennas mount to platforms, towers and structures via a 26″ (660.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

All metals used in the radiator, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

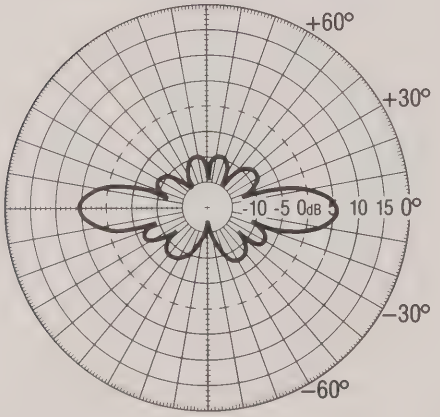
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead UHF connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

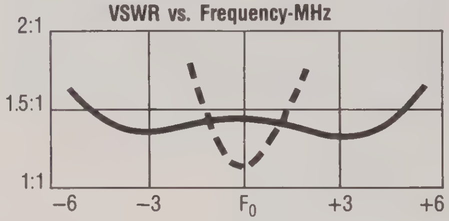
A flexible VB-8 (VAPOR-BLOC®) jumper is provided with UHF and N-Male connectors attached to each end.

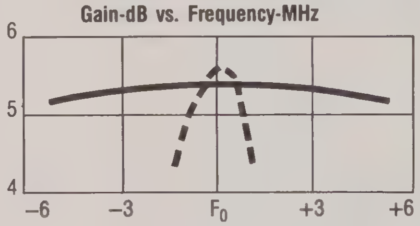
Ordering Information

Order DB506W or DB506WB antenna. Please specify exact frequency or frequency range. DB370 Galvanized Steel Hardware and Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD, angle members up to 2.5″ (63.5 mm).

DB506W Typical Vertical Radiation Pattern

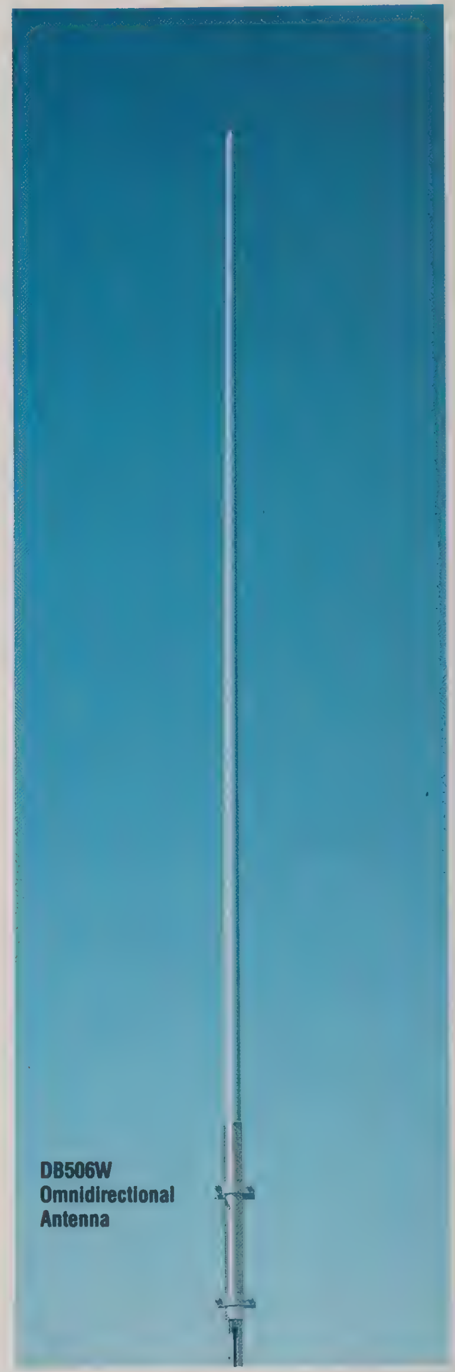






NOTE: DB506WB, dashed line. DB506W, solid line.

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.



DB506W Omnidirectional Antenna

Electrical Data

	DB506W	DB506WB
Frequency Range — MHz	150-174	138-174
Bandwidth — MHz	9.0	1.5
Gain — dB	5.25 ± .5	5.5 ± .5
Beamwidth "E" Plane (half power)	18°	18°
Beamwidth "H" Plane (half power)	Omni	Omni
Maximum power input — watts	500	500
VSWR	See Curve	See Curve
Lightning protection	Direct ground	Direct ground
Termination	Type UHF-Female (Fixed)	Type UHF-Female (Fixed)
VB-8 (VAPOR-BLOC®) jumper	UHF-Male/N-Male	UHF-Male/N-Male

Note: gain reduced slightly in special 118-150 MHz band.

Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	110 (49.90)
Length:	
Overall — ft. (m)	22.25 (6.78)
Radome — ft. (m)	20 (6.1)
Mounting pipe — in. (mm)	26 (660.4)
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	2.83 (.263)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support Pipe	6061-T6 Aluminum
Clamps	Galvanized steel
Net weight — lbs. (kg)	40 (18.14)
Shipping weight (w/clamp) — lbs. (kg)*	69 (31.3)

*Mounting Clamps shipped separately.

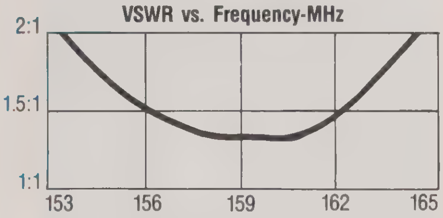
DB506WM

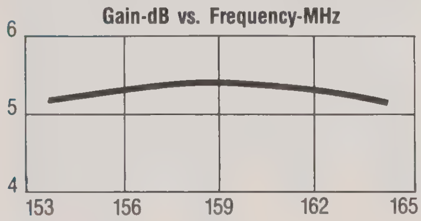
VHF MARINE OMNI ANTENNA
5.25 dBd GAIN, 156-162.5 MHz

NEW AQUAMARINE COLOR!
DB506WM Omnidirectional Antenna

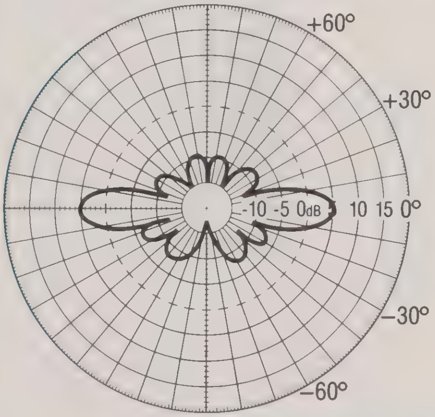
A 5.25 dBd gain omnidirectional antenna for commercial marine vessels and shore stations, the DB506WM has radiators enclosed in our new Aeroglas™ fiberglass radome in DB Aquamarine™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.





DB506WM Typical Vertical Radiation Pattern



A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB506WM mounts to platforms, towers and masts via a 26″ (660.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

All metals used in the radiator, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead UHF connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

A flexible VB-8 (VAPOR-BLOC®) jumper is provided with UHF and N-Male connectors attached to each end.

Ordering Information

Order DB506WM with 5.25 dBd gain. Please specify VHF marine frequency range. DB370 Galvanized Steel Hardware and Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD, angle members up to 2.5″ (63.5 mm).

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

Electrical Data

Frequency Range — MHz	156-162.55
Bandwidth — MHz	9.0
Gain — dB	5.25 ± .5
Beamwidth "E" Plane (half power)	18°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	250
VSWR	See Curve
Lightning protection	Direct ground
Termination	Type UHF-Female (Fixed)
VB-8 (VAPOR-BLOC®) jumper	UHF-Male/N-Male

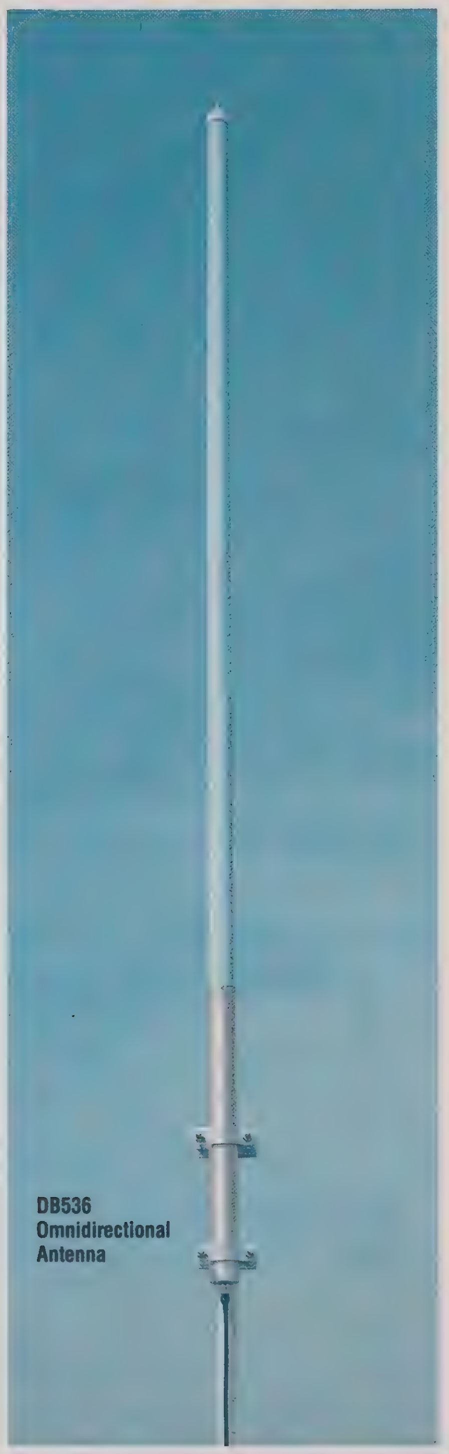
Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	110 (49.90)
Length:	
Overall — ft. (m)	22.25 (6.78)
Radome — ft. (m)	20 (6.1)
Mounting pipe — in. (mm)	26 (660.4)
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	2.83 (.263)
Net weight — lbs. (kg)	40 (18.14)
Shipping weight (w/clamps) — lbs. (kg)*	69 (31.3)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel

*Mounting Clamps shipped separately.

DECIBEL

DB536 OMNIDIRECTIONAL ANTENNA
5.5 dBd GAIN, 380-512 MHz


DB536 Omnidirectional Antenna

A 5.5 dBd gain omnidirectional antenna for UHF conventional, paging and radiotelephone site installations, the DB536 uses patented Center-Fed-Collinear™ design and is enclosed in our new Aeroglas™ fiberglass radome in DB Horizon Blue™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB536 mounts to platforms, towers and structures via a 26″ (660.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

A unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

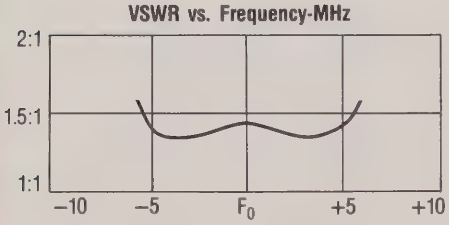
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

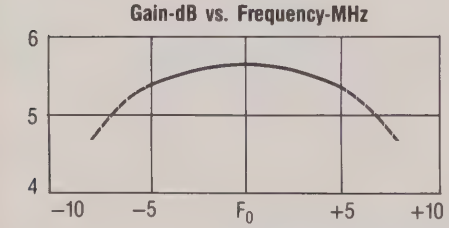
A flexible VB-8 (VAPOR-BLOC®) jumper is provided with N-Male connectors attached to each end.

Ordering Information

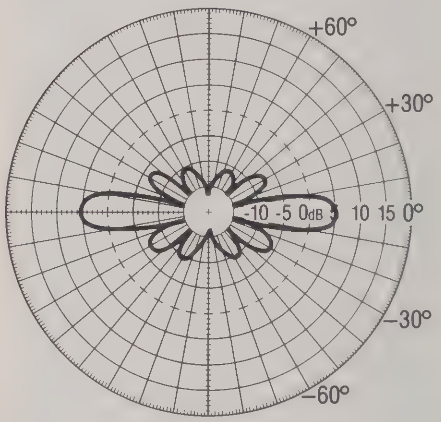
Order DB536 with 5.5 dBd gain. Please specify exact frequency or range. DB370 Galvanized Steel Hardware and Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD, angle members up to 2.5″ (63.5 mm).

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.


VSWR vs. Frequency-MHz


Gain-dB vs. Frequency-MHz

DB536 Typical Vertical Radiation Pattern



Electrical Data	
Frequency Range — MHz	380-512
Bandwidth (450-512 MHz) — MHz	10
Gain — dBd	5.5 ± .5
Beamwidth "E" Plane (half power)	13°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	400
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
VB-8 (VAPOR-BLOC®) jumper	N-Male/N-Male

Note: Gain reduced slightly in 380-450 MHz band.

Mechanical Data	
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	65 (29.48)
Length:	
Overall — ft. (m)	9.92 (3.02)
Radome — ft. (m)	8 (2.44)
Mounting pipe — in. (mm)	23 (584.2)
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.08 (.10)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel
Net weight — lbs. (kg)	15 (6.80)
Shipping weight (w/clamp) — lbs. (kg)*	54 (24.49)

*Mounting Clamps shipped separately.

DB538 OMNIDIRECTIONAL ANTENNA 7.5 dBd GAIN, 380-512 MHz

A 7.5 dBd gain omnidirectional antenna for UHF conventional, paging and radiotelephone site installations, the DB538 uses patented Center-Fed-Collinear™ design and is enclosed in our new Aeroglas™ fiberglass radome in DB Horizon Blue™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB538 mounts to platforms, towers and structures via a 26″ (660.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

A unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

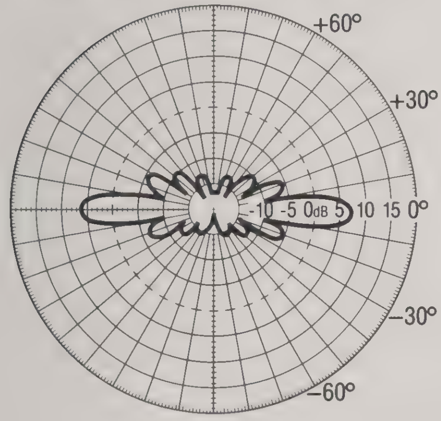
A flexible VB-8 (VAPOR-BLOC®) jumper is provided with N-Male connectors attached to each end.

Ordering Information

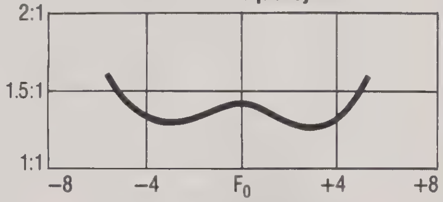
Order the DB538 with 7.5 dBd gain. Please specify exact frequency or range. DB370 Galvanized Steel Hardware and Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD, angle members up to 2.5″ (63.5 mm).

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.

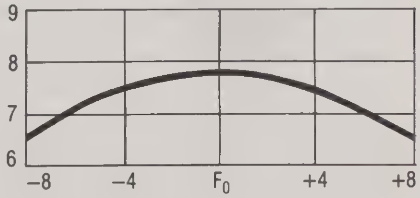
DB538 Typical Vertical Radiation Pattern



VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz



DB538 Omnidirectional Antenna

Electrical Data

Frequency Range — MHz	380-512
Bandwidth (450-512 MHz) — MHz	10
Gain — dBd	7.5 ± .5
Beamwidth "E" Plane (half power)	10°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	400
VSWR	1:5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
VB-8 (VAPOR-BLOC®) jumper	N-Male/N-Male

Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	50 (22.68)
Length:	
Overall — ft. (m)	14.25 (4.34)
Radome — ft. (m)	12.34 (3.76)
Mounting pipe — in. (mm)	24 (609.6)
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.58 (.147)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel
Net weight — lbs. (kg)	15 (6.80)
Shipping weight (w/clamps) — lbs. (kg)*	39 (17.69)

*Mounting Clamps shipped separately.

DECIBEL

DB540 OMNIDIRECTIONAL ANTENNA 10 dBd GAIN, 380-512 MHz

A 10 dBd gain omnidirectional antenna for UHF conventional, paging and radiotelephone site installations, the DB540 uses patented Center-Fed-Collinear™ design and is enclosed in our new Aeroglas™ fiberglass radome in DB Horizon Blue™ color.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB540 mounts to platforms, towers and structures via a 26″ (660.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

A unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

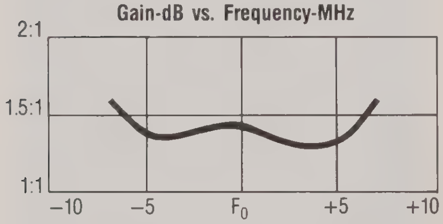
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

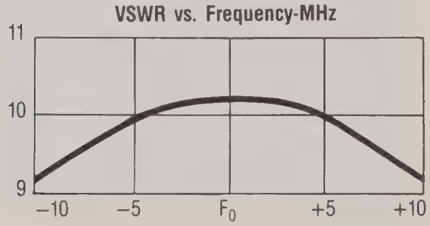
A flexible VB-8 (VAPOR-BLOC®) jumper is provided with N-Male connectors attached to each end.

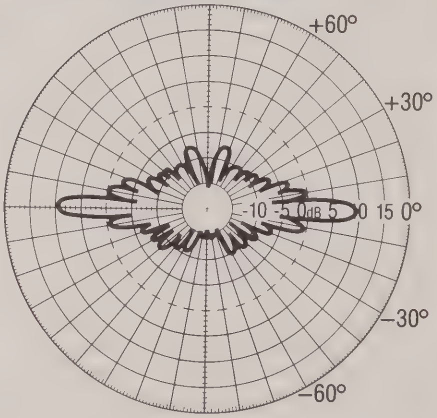
Ordering Information

Order DB540 with 10 dBd gain. Please specify exact frequency or range. DB370 Galvanized Steel Hardware and Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD and angle members up to 2.5″ (63.5 mm).

VAPOR-BLOC is a registered trademark of Decibel Products, Inc.


Gain-dB vs. Frequency-MHz


VSWR vs. Frequency-MHz


DB540 Typical Vertical Radiation Pattern

DB540 Omnidirectional Antenna

Electrical Data

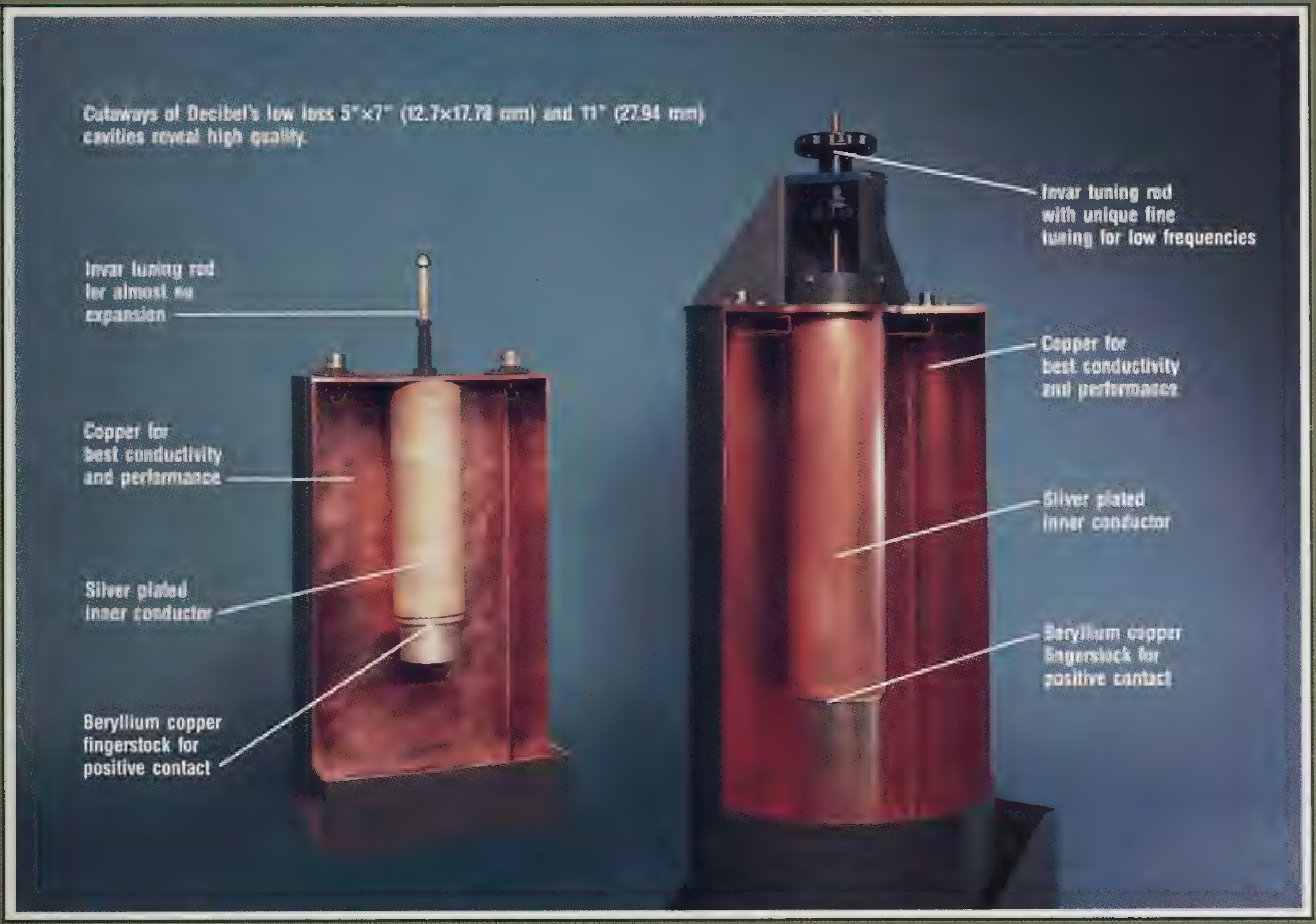
Frequency Range — MHz	380-512
Bandwidth (450-512 MHz) — MHz	10
Gain — dB	10 ± .5
Beamwidth "E" Plane (half power)	7°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	400
VSWR	See Curve
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
VB-8 (VAPOR-BLOC®) jumper	N-Male/N-Male

Note: gain reduced slightly in 380-450 MHz band.

Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	100 (45.36)
Length:	
Overall — ft. (m)	22.25 (6.78)
Radome — ft. (m)	20 (6.1)
Mounting pipe — in. (mm)	26 (660.4)
Net weight — lbs. (kg)	40 (18.14)
Shipping weight (w/clamps) — lbs. (kg)	85 (38.56)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel

*Mounting Clamps shipped separately.



Cutaways of Decibel's low loss 5"×7" (12.7×17.78 mm) and 11" (27.94 mm) cavities reveal high quality.

Invar tuning rod for almost no expansion
Copper for best conductivity and performance
Silver plated inner conductor
Beryllium copper fingerstock for positive contact
Invar tuning rod with unique fine tuning for low frequencies
Copper for best conductivity and performance
Silver plated inner conductor
Beryllium copper fingerstock for positive contact

Filters—the Quest for Quality!

Decibel's high Q cavities are the basic building blocks of Decibel's high quality filters, duplexers, combiners, etc.

To achieve superior performance, Decibel uses good workmanship and many special techniques and materials. Some of the more important ones include:

☐ The tuning piston is made of a threaded Invar steel rod with almost no expansion, which keeps it tuned in all temperatures.

☐ Copper cavities, completely soldered, are used for highest performance. Less costly aluminum cavities are also used when requirements are less stringent.

☐ Current carrying elements are made of copper or silver plated brass, including the center conductor.

☐ Beryllium copper fingerstock with spring compression is used to maintain positive contact between the fixed and moving parts of the center conductor.

☐ Unique resonators with helical steel or copper pistons are used in some of Decibel's cavities to achieve a 3 to 1 size reduction.

Decibel has also updated products and added new ones, such as SHAPE FACTORED FILTERS®, to meet frequency requirements and customer expectations.

Of course, Decibel's new products — like its standard ones — maintain Decibel's quest for the highest quality.

If you want quality, you want Decibel filters, cavities, duplexers and combiners.

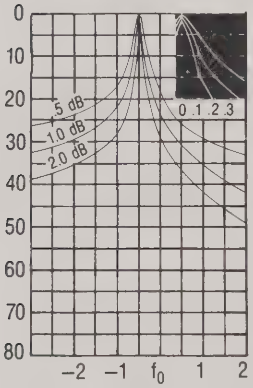
SHAPE FACTORED FILTER is a registered trademark of Decibel Product's, Inc.

DB4042 BANDPASS CAVITIES ROTATABLE LOOPS, 30-50 MHz

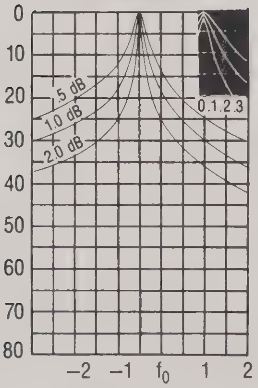
The DB4042 is a one-quarter wavelength high Q coaxial cavity for the 30-50 MHz band. Installed between the antenna and the transmitter, it reduces interference that is frequency rejectable.

Three models are offered, each with a tuning range in excess of 6 MHz. DB4042L-1 covers the 30-36 MHz band, DB4042M-1 the 36-42 MHz band, and DB4042H-1 the 42-50 MHz band. Two-cavity versions of the three models are also available for greater selectivity.

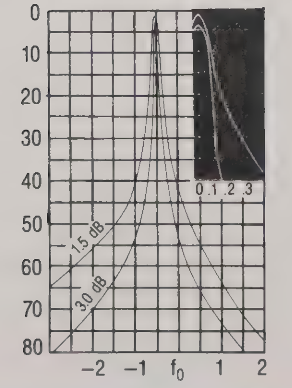
DB4042L-1 Single-Cavity, 35 MHz Attenuation-dB vs. Frequency-MHz



DB4042H-1 Single-Cavity, 45 MHz Attenuation-dB vs. Frequency-MHz



DB4042H-2 Two-Cavity, 45 MHz Attenuation-dB vs. Frequency-MHz



Design and Construction

The cavity can be field tuned to any frequency in its range by turning the threaded rod, which varies the piston length in the center coaxial conductor. Contact is maintained by beryllium copper fingerstock with spring compression.

Selectivity is adjustable from the top of the cavity. Rotatable coupling loops can be set to correspond to total attenuations of 0.5, 1.0 or 2.0 dB, with minimum attenuation of the desired signal.

An Invar rod, with nearly zero expansion, assures frequency stability over a wide temperature range.

For ruggedness, the end plates and the inner and outer conductor are made of chromated aluminum. Galvanic corrosion is minimized by using similar materials or by plating or chemical conversion treatment.

Ordering Information

For 30-36 MHz order DB4042L-1 single or DB4042L-2 two cavity; for 36-42 MHz order DB4042M-1 single or DB4042M-2 two cavity; for 42-50 MHz order DB4042H-1 single or DB4042H-2 two cavity. Cables and mounting rails are included.

DB4042 Bandpass Cavity

Electrical Data

	DB4042L-1	DB4042M-1	DB4042H-1
Frequency Range — MHz	30-36	36-42	42-50
Insertion loss (desired frequency) — adjustable — dB	0.5 to 2.0	0.5 to 2.0	0.5 to 2.0
Attenuation (undesired frequency)	See curves	—	See curves
VSWR at resonance (maximum)	1.5 to 1	1.5 to 1	1.5 to 1
Maximum power input (continous duty) with insertion loss per cavity — watts			
At 0.5 dB loss	500	500	500
At 1.0 dB loss	400	400	400
At 2.0 dB loss	250	250	250
Temperature range (for negligible frequency shift) — C°	−30 to +60	−30 to +60	−30 to +60
Nominal impedance — ohms	50	50	50

Mechanical Data

	DB4042L-1	DB4042M-1	DB4042H-1
Materials:			
Outer conductor	Aluminum	Aluminum	Aluminum
Inner conductor	Aluminum	Aluminum	Aluminum
Tuning rod	Invar	Invar	Invar
End plates	Aluminum	Aluminum	Aluminum
Coupling loops	Copper	Copper	Copper
Dimensions: — in. (mm)			
Individual cavity	10 (254) dia. × 76 (1,930.4)	10 (254) dia. × 76 (1,930.4)	10 (254) dia. × 65 (1,651)
Outside with tuning rod extended (maximum)	10 (254)×13 (330.2) ×108 (2,743.2)	10 (254)×13 (330.2) ×108 (2,743.2)	10 (254)×13 (330.2) ×87 (2,209.8)
Connector terminations	UHF Female	UHF Female	UHF Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	24 (10.89)	24 (10.89)	21 (9.53)
Shipping weight — lbs. (kg)	90 (40.82)	90 (40.82)	80 (36.29)

DB4339 HEAVY DUTY CROSS BAND COUPLER 406-512 and 806-932 MHz

DECIBEL

DB4339WB Cross Band Coupler

With the DB4339 you need only one transmission line for both 406-512 and 806-932 MHz, which can amount to substantial savings.

The cross band coupler meets the high power requirements of transmitter combining and provides maximum lightning protection. It can also be used for receiving systems.

Design and Construction

The DB4339 Cross Band Coupler removes any question of reliability. Only high voltage and high current materials are used to make the coupler, which guarantees maximum power handling and efficiency.

A water resistant enclosure insures weather protection for tower top or outside use.

Features

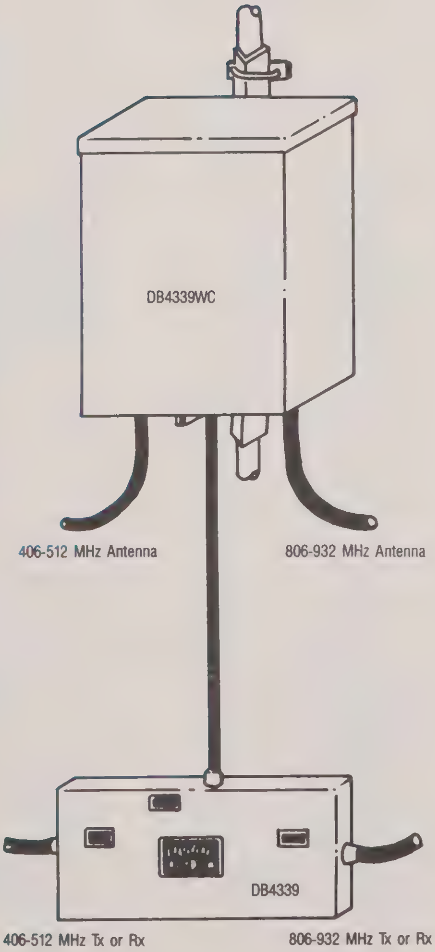
☐ Low loss stripline design,
☐ Weather proof,
☐ 1000 watts capability,
☐ No tuning required, and
☐ Since only one transmission line is needed for 406-512 and 806-932 MHz, you save the cost of additional transmission line.

Ordering Information

Order DB4339 for 406-512 and 806-932 MHz cross band coupling. Order DB833WB to include the rack mounting bracket. Order DB4339WC to include the optional weather enclosure.

Electrical Data	
Frequency Range — MHz	406-512, 806-932
Insertion loss — dB	.25 typical
VSWR	less than 1.5 to 1 (all three ports)
Temperature Range — C°	−30° to +60°
Power handling (max.) — Kw	1
Band-to-band isolation — dB	40 (min.)

Mechanical Data	
Dimension — in. (mm)	
Length	14.25 (362)
Width	7.0 (177.8)
Depth	1.25 (31.75)
Weather Enclosure	18 (457.2)×15 (381.0) ×6 (152.4)
Mounting	wall mount or in weather-resistant enclosure
Connectors	N-Female or optional LC for higher power
Finish	Decibel Tek Black™



DB4001, DB4011 DB4015, DB4018 5" (127 mm) BANDPASS CAVITIES ROTATABLE LOOPS, 66-400 MHz

DECIBEL

Electrical Data

	DB4001-1	DB4001-2	DB4001-3
Frequency Range — MHz	148-174	148-174	148-174
	DB4011-1	DB4011-2	DB4011-3
Frequency Range — MHz	66-88	66-88	66-88
	DB4015-1	DB4015-2	DB4015-3
Frequency Range — MHz	118-148	118-148	118-148
	DB4018-1	DB4018-2	DB4018-3
Frequency Range — MHz	225-400	225-400	225-400
Insertion loss (desired frequency) — dB	Adjustable 0.5 to 2	Adjustable 1.0 to 4	Adjustable 1.5 to 6
Attenuation (undesired frequency)	See curves	See curves	See curves
Impedance — ohms	50	50	50
VSWR at resonance (maximum)	1.5 to 1	1.5 to 1	1.5 to 1
Maximum power input (continuous duty) — watts with insertion loss per cavity at:			
0.5 dB	400	400	400
1.0 dB	250	250	250
2.0 dB	150	150	150
Temperature range (for negligible frequency shift) — C°	−30 to +60	−30 to +60	−30 to +60

Mechanical Data

	DB4001-1	DB4001-2	DB4001-3
Dimensions — in. (mm)			
Individual cavity	5 (127)×21 (533.4)	5 (127)×21 (533.4)	5 (127)×21 (533.4)
Maximum, outside (with tuning rod extended)	7 (177.8)×6 (152.4)× 27 (685.8)	7 (177.8)×13 (330.2)× 27 (685.8)	7 (177.8)×19 (482.6)× 27 (685.8)
Net weight — lbs. (kg)	5 (2.27)	13 (5.9)	20 (9.07)
Shipping weight — lbs. (kg)	8.5 (3.86)	18 (8.16)	25 (11.34)
	DB4011-1	DB4011-2	DB4011-3
Dimensions — in. (mm)			
Individual cavity	5 (127)×46 (1,168.4)	5 (127)×46 (1,168.4)	5 (127)×46 (1,168.4)
Maximum, outside (with tuning rod extended)	7 (177.8)×6 (152.4) ×61 (1,549.4)	7 (177.8)×13 (330.2) ×61 (1,549.4)	7 (177.8)×19 (482.6) ×61 (1,549.4)
Net weight — lbs. (kg)	9 (4.08)	22 (9.98)	32 (14.51)
Shipping weight — lbs. (kg)	17 (7.71)	40 (18.14)	60 (27.22)
	DB4015-1	DB4015-2	DB4015-3
Dimensions — in. (mm)			
Individual cavity	5 (127)×27 (685.8)	5 (127)×27 (685.8)	5 (127)×27 (685.8)
Maximum, outside (with tuning rod extended)	7 (177.8)×6 (152.4)× 36 (914.4)	7 (177.8)×13 (330.2)× 36 (914.4)	7 (177.8)×19 (482.6)× 36 (914.4)
Net weight — lbs. (kg)	7 (3.18)	18 (8.16)	27 (12.25)
Shipping weight — lbs. (kg)	11 (4.99)	31 (14.06)	50 (22.68)
	DB4018-1	DB4018-2	DB4018-3
Dimensions — in. (mm)			
Individual cavity	5 (127)×11 (279.4)	5 (127)×11 (279.4)	5 (127)×11 (279.4)
Maximum, outside (with tuning rod extended)	7 (177.8)×6 (152.4)× 18 (457.2)	7 (177.8)×13 (330.2)× 18 (457.2)	7 (177.8)×19 (482.6)× 18 (457.2)
Net weight — lbs. (kg)	3.25 (1.47)	10.5 (4.76)	16 (7.26)
Shipping weight — lbs. (kg)	6 (2.72)	13 (5.9)	21 (9.53)
Materials:			
Outer conductor	Aluminum	Aluminum	Aluminum
Inner conductor	Silver plated copper	Silver plated copper	Silver plated copper
Tuning rod	Invar	Invar	Invar
Coupling loops	Copper	Copper	Copper
Connector terminations	UHF Female	UHF Female	UHF Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™

Available in one, two or three cavity configurations, the DB4000 series features a quarter-wave high Q coaxial cavity for the 66-400 MHz bands.

Installed between the antenna and the transmitter or receiver, the cavities reduce interference that is frequency rejectable. They can be mounted in any position.

Design and Construction

The cavities are tuned to any resonant frequency in the band by turning the threaded Invar rod, which varies the piston length in the center coaxial conductor. Contact is maintained by an indented ring with spring compression.

The Invar rod, with nearly zero expansion, assures frequency stability over a wide temperature range.

Selectivity is adjustable from the front of the cavities. Rotatable coupling loops can be set to correspond to total attenuations of 0.5, 1.0 or 2.0 dB, with minimum attenuation of the desired signal.

For ruggedness and efficiency, the end plates are made of chromated aluminum, coupling loops of copper, and the center conductor and piston of silver plated copper. Galvanic corrosion is minimized by using similar materials or by plating or chemical conversion treatment.

Ordering Information

Specify single, two or three cavity configurations for the desired frequency band. (See specs.) Cables and mounting rails for dual and triple models are included. Optional cabinets include DB5014 weatherproof housing and DB5015 and DB5017 weather resistant cabinets.

DB4001, DB4011 DB4015, DB4018 5" (127 mm) BANDPASS CAVITIES CONTINUED

DECIBEL

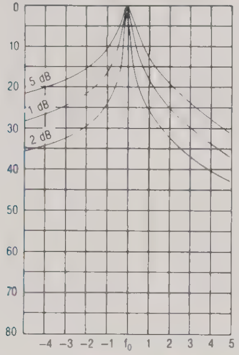
Single Cavity

Dual Cavity

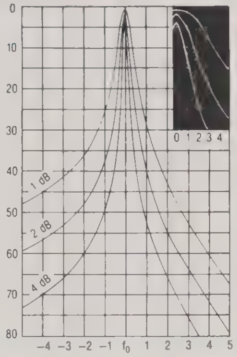
Triple Cavity

Typical Selectivity Characteristics of DB4011, 66-88 MHz

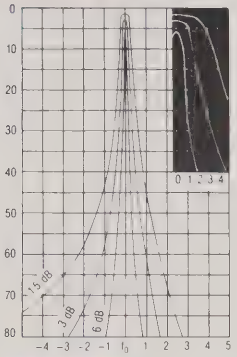
DB4011-1 Single Cavity
Attenuation-dB vs. Frequency-MHz



DB4011-2 Two Cavity
Attenuation-dB vs. Frequency-MHz

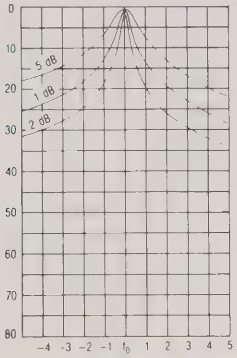


DB4011-3 Three Cavity
Attenuation-dB vs. Frequency-MHz

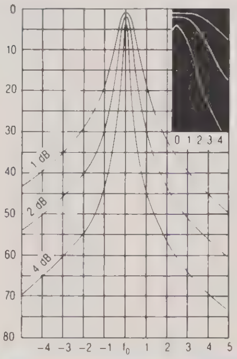


Typical Selectivity Characteristics of DB4015, 118-148 MHz

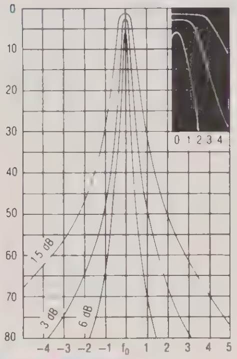
DB4015-1 Single Cavity
Attenuation-dB vs. Frequency-MHz



DB4015-2 Two Cavity
Attenuation-dB vs. Frequency-MHz

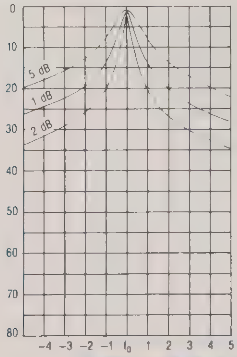


DB4015-3 Three Cavity
Attenuation-dB vs. Frequency-MHz

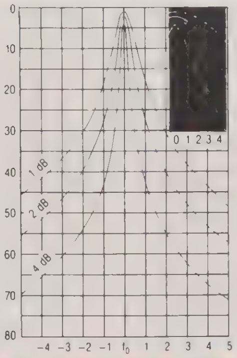


Typical Selectivity Characteristics of DB4001, 148-174 MHz

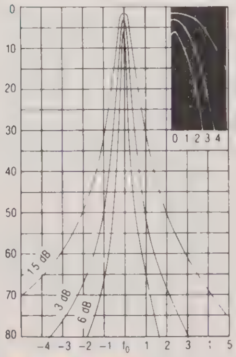
DB4001-1 Single Cavity
Attenuation-dB vs. Frequency-MHz



DB4001-2 Two Cavity
Attenuation-dB vs. Frequency-MHz

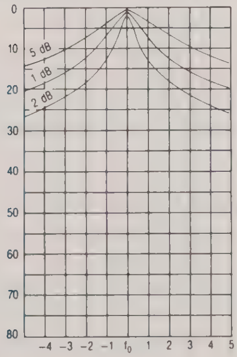


DB4001-3 Three Cavity
Attenuation-dB vs. Frequency-MHz

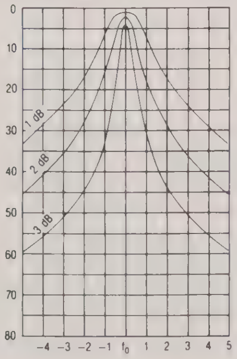


Typical Selectivity Characteristics of DB4018, 225-400 MHz

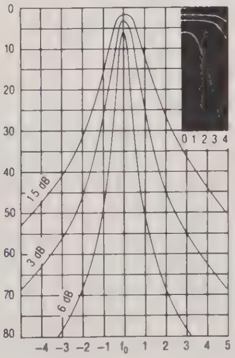
DB4018-1 Single Cavity
Attenuation-dB vs. Frequency-MHz



DB4018-2 Two Cavity
Attenuation-dB vs. Frequency-MHz



DB4018-3 Three Cavity
Attenuation-dB vs. Frequency-MHz



DB4170 DB4171 8″ (203.2 mm) BANDPASS CAVITIES 138-174 and 406-512 MHz

DB4170 is a one-quarter wavelength, high Q coaxial cavity for the 138-174 MHz band. DB4171 is similar but has a three-quarter wavelength cavity for the 406-512 MHz band. Installed between the antenna and the receiver or transmitter, they reduce interference that is frequency rejectable.

In addition to the single cavity, Decibel offers two-cavity and three-cavity models for greater selectivity. They can be mounted in any position.

Design and Construction

The cavities can be tuned to any resonant frequency in the band by turning the threaded rod, which varies the piston length in the center coaxial conductor. Contact is maintained by beryllium copper fingerstock with spring compression.

Selectivity is adjustable from the front of the cavities. Rotatable coupling loops can be set to correspond to total attenuations of 0.5, 1.0 or 2.0 dB, with minimum attenuation of the desired signal.

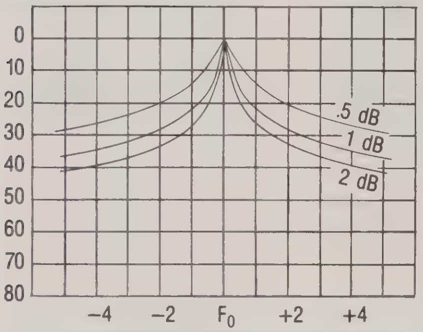
An Invar rod — with nearly zero expansion — assures frequency stability over a wide temperature range.

Ordering Information

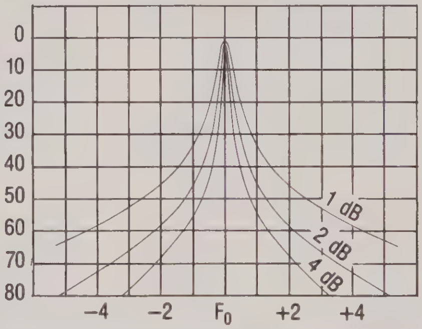
For 138-174 MHz, order DB4170-1 single cavity, DB4170-2 two-cavity or DB4170-3 three-cavity unit. For 406-512 MHz, order DB4171-1 single cavity or DB4171-2 two-cavity. Interconnecting cables and mounting rails are included for dual and triple models.

DB4170-2
Dual Cavity

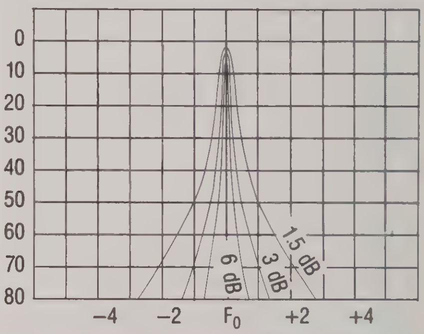
Single-Cavity Attenuation-dB vs. Frequency-MHz



Two-Cavity Attenuation-dB vs. Frequency-MHz



Three-Cavity Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4170-1	DB4170-2	DB4170-3	DB4171-1	DB4171-2
Frequency Ranges — MHz	A = 138-144 B = 150-174	A = 138-144 B = 150-174	A = 138-144 B = 150-174	A = 406-420 B = 450-512	A = 406-420 B = 450-512
Insertion loss (desired frequency) — dB	.5 to 2	1 to 4	1.5 to 6	.5 to 2	1 to 4
Attenuation (undesired frequency) — dB	See curves	See curves	See curves	See curves	See curves
Nominal impedance — ohms	50	50	50	50	50
VSWR at maximum resonance — ohms	1.5 to 1	1.5 to 1	1.5 to 1	1.5 to 1	1.5 to 1
Maximum power input with insertion loss per cavity (continuous) — watts					
At 0.5 dB	500	500	500	400	500
At 1.0 dB	400	400	400	250	400
At 2.0 dB	250	250	250	150	250
Temperature range (for negligible range) — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60
Cavity electrical length — wavelength	.25	.25	.25	.75	.75

Mechanical Data

	DB4170-1	DB4170-2	DB4170-3	DB4171-1	DB4171-2
Materials:					
Outer conductor	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Inner conductor	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Tuning rod	Invar	Invar	Invar	Invar	Invar
End plates	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Coupling loops	Copper	Copper	Copper	Copper	Copper
Dimensions:					
Individual cavity — in. (mm)	8 (203.2) dia. × 22 (558.8)	8 (203.2) dia. × 22 (558.8)	8 (203.2) dia. × 22 (558.8)	8 (203.2) dia. × 21 (533.4)	8 (203.2) dia. × 21 (533.4)
Maximum, outside (with tuning rod extended) — in. (mm)	8 (203.2)×10(254) ×28 (711.2)	17 (431.8)×10 (254) ×28 (711.2)	26 (660.4)×10 (254) ×28 (711.2)	29 (736.6)	29 (736.6)
Connector terminations	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	9 (4.08)	21 (9.53)	22 (9.98)	8 (3.6)	20 (9)
Shipping weight — lbs (kg)	28 (12.7)	42 (19.05)	45 (20.41)	15 (6.75)	38 (17.1)

DB4168, DB8934 DB8936 SHAPE FACTORED FILTERS® 118-400 MHz

Three models of Decibel's VHF SHAPE FACTORED FILTERS are offered to give broadband responses in the 118-136, 148-174 and 225-400 MHz frequency bands.

These filters have the characteristics of a broad, yet essentially flat passband with steep rejection of out-of-band frequencies.

Applications

SHAPE FACTORED FILTERS are suitable for sites that require a wide receive frequency spectrum, or where combining a band of frequencies is necessary.

The filter goes between a receiver multicoupler and an antenna, and when so applied, the multicoupler will respond only to the prime frequency band.

Because of the broad frequency response of these filters, they should be used only on receiver sites. Transmitters at the same location, whose frequencies fall within the passband of these filters, could overdrive the RF amplifier and produce intermodulation interference.

Decibel's SHAPE FACTORED FILTERS use computer design techniques for the selection of discrete components that will provide the desired frequency response. They are dc grounded to prevent static discharge and lightning damage to the multicoupler.

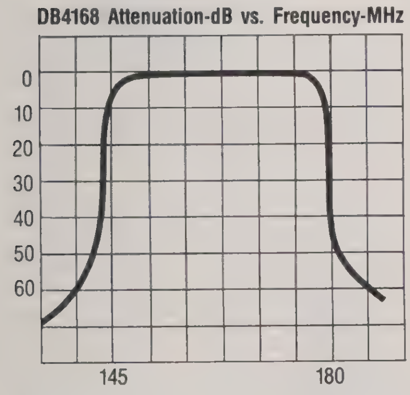
Ordering Information

Please specify exact frequency range. Order DB4168 for 148-174 MHz, DB8934 for 118-136 MHz, and DB8936 for 225-400 MHz.

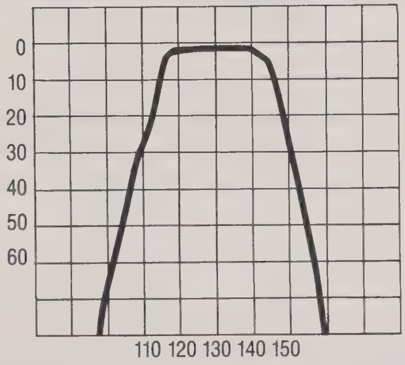
SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

DB4168 SHAPE FACTORED FILTERS

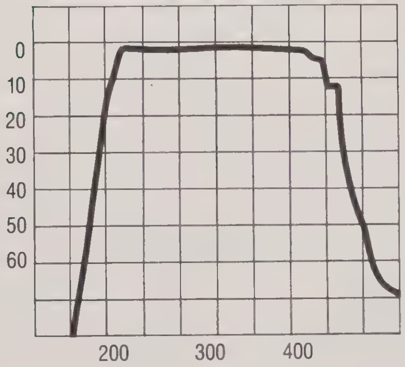
DB4168 Attenuation-dB vs. Frequency-MHz



DB8934 Attenuation-dB vs. Frequency-MHz



DB8936 Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4168	DB8934	DB8936
Frequency Range — MHz	148-174	118-136	225-400
Pass bandwidth — MHz	26	18	175
Insertion loss — dB	<2	<2.5	<2.5
Return loss	1.5 to 1	1.5 to 1	2.1 to 1
Attenuation — dB at ± (*) MHz from center pass frequency	* (23 MHz) >50	* (30 MHz) >50	* (160 MHz) >45
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60

Mechanical Data

Dimensions (D×W×H) — in. (mm)	9.375 (238.125)× 3.375 (85.725)×1.75 (44.45)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	2 (.91)
Shipping weight — lbs. (kg)	3 (1.36)

DB4002 11" (279.4 mm) BANDPASS CAVITIES 118-174 and 406-512 MHz

DECIBEL

Four models are offered, DB4002-A for 118-148 MHz, DB4002-B for 144-174 MHz, DB4002-C for 406-420 MHz, and DB4002-D for 450-512 MHz. Installed between the antenna and the transmitter or receiver, the cavities reduce interference that is frequency rejectable.

Each cavity is supplied with adjustable loops which can be set to a nominal insertion loss of 0.5, 1.0 or 3.0 dB.

The cavity should be mounted in a vertical position on a flat surface that is unexposed to the elements.

Design and Construction

The DB4002 provides greater selectivity than smaller or aluminum-made cavities. It has an 11" (279.4 mm) diameter and, with all current carrying surfaces made of copper or silver-plated brass, it has a very high "Q" factor. This is especially important when the attenuated frequency is close to the passed frequency.

To tune the cavity, the tuning knob is turned to vary the piston length in the center coaxial conductor. Contact is maintained by beryllium copper fingerstock with spring compression.

An Invar rod - with nearly zero expansion - assures frequency stability over a wide temperature range.

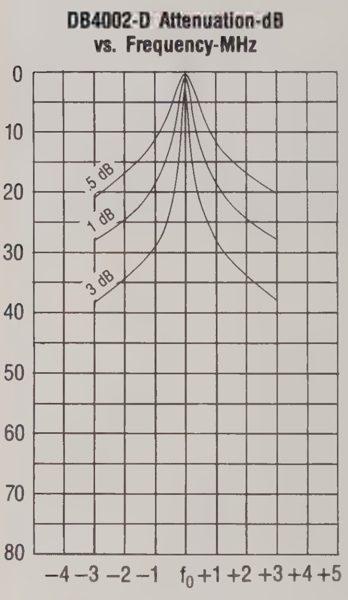
For greater selectivity, two or more cavities can be used in series.

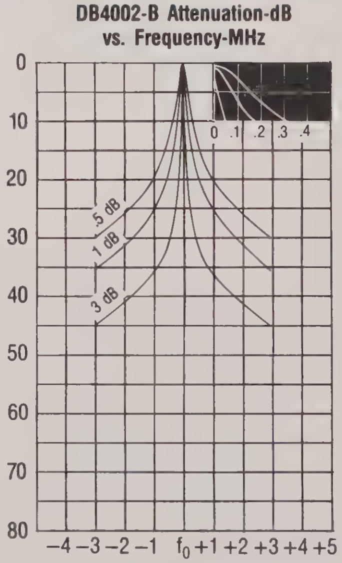
Ordering Information

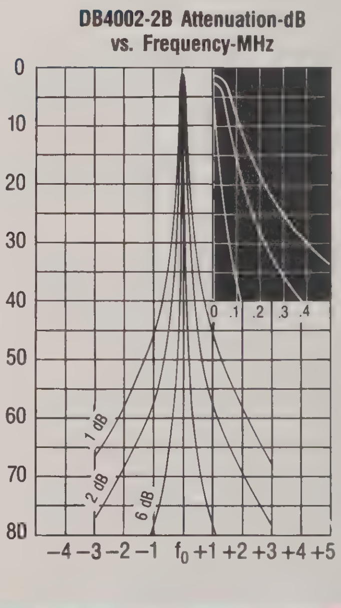
Order DB4002-A or DB4002-2A two cavity for 118-148 MHz, DB4002-B or DB4002-2B two cavity for 144-174 MHz, DB4002-C or DB4002-2C for 406-420 MHz, and DB4002-D or DB4002-2D for 450-512 MHz. A mounting bracket is included, also instructions for field tuning the cavity.

DB4002 Bandpass Cavity

The three curves correspond to the adjustable loops supplied with the cavity (0.5, 1.0 and 3.0 dB). The black insets expand the frequency scale in the region of 0 to 0.5 MHz.


DB4002-D Attenuation-dB vs. Frequency-MHz


DB4002-B Attenuation-dB vs. Frequency-MHz


DB4002-2B Attenuation-dB vs. Frequency-MHz

Mechanical Data

	All models
Materials:	
Outer conductor	Copper
Inner conductor	Copper & Brass
End Plates	Copper & Brass
Coupling loops	Copper
Tuning rod	Invar
Dimensions — in. (mm)	
Individual cavity	11 (279.4) dia. × 31 (787.4)
Maximum, outside (with tuning rod extended)	12 (304.8)×12 (304.8)×35 (889)
Connector terminations	UHF Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	39 (17.69)
Shipping weight — lbs. (kg)	48 (21.77)

Electrical Data

Frequency Ranges — MHz	118-148, 144-174, 406-420, 450-512
Insertion loss (desired frequency) loops supplied — dB	.5, 1.0 & 3.0
Attenuation (undesired frequency) - dB	See curves
Nominal impedance — ohms	50
Maximum power input (continuous) with insertion loss per cavity — watts	
At 0.5 dB	400
At 1.0 dB	350
At 3.0 dB	200
Temperature range (for negligible frequency shift) — C°	−30 to +60
Cavity electrical length — wavelength	0.25 @ 118-174 MHz, 0.75 @ 406-512 MHz

DB4020 DB4021 BANDPASS CAVITIES 406-420 and 450-512 MHz

DECIBEL

These are three-quarter wavelength, high Q coaxial cavities, the DB4020 for use in the 406-420 MHz band, the DB4021 in the 450-512 MHz band. Installed between the antenna and the transmitter or receiver, the cavities reduce interference that is frequency rejectable.

Dual and triple cavity configurations are available as well as single cavities. They can be mounted in any position. For outdoors, the DB5015 weather resistant cabinet is available as an optional item.

Design and Construction

The cavities are tuned to any resonant frequency in the band by turning the threaded Invar rod, which varies the piston length in the center coaxial conductor. Contact is maintained by an indented ring with spring compression.

The Invar rod, which has almost zero expansion, assures frequency stability over a wide range of temperatures.

Selectivity is adjustable from the front of the cavities. Rotatable coupling loops can be set to correspond to total attenuations of 0.5, 1.0 or 2.0 dB, with minimum attenuation of the desired signal.

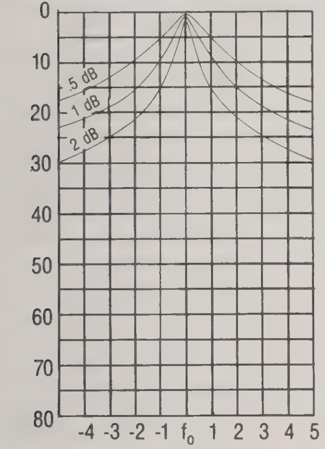
For ruggedness and efficiency, the end plates are made of chromated alluminum, coupling loops of copper, and the center conductor and piston of silver plated copper. Galvanic corrosion is minimized by similar materials or by plating or chemical conversion treatment.

Ordering Information

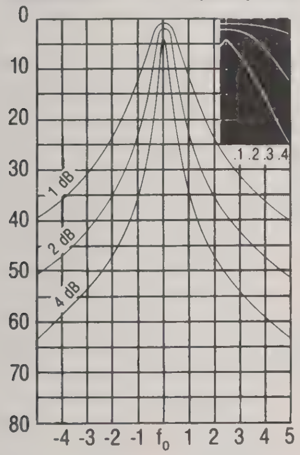
For 406-420 MHz, order DB4020-1 single, DB4020-2 dual or DB4020-3 three cavity. For 450-512 MHz, order DB4021-1 single, DB4021-2 dual or DB4021-3 three cavity. For outdoor use, order the DB5015 cabinet.

Single Cavity
Dual Cavity
Triple Cavity

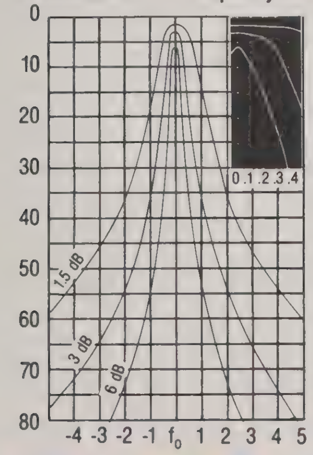
DB4020-1 and DB4021-1 Single Cavity Attenuation-dB vs. Frequency-MHz



DB4020-2 and DB4021-2 Two Cavity Attenuation-dB vs. Frequency-MHz



DB4020-3 and DB4021-3 Three Cavity Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4020-1, DB4021-1	DB4020-2, DB4021-2	DB4020-3, DB4021-3
Frequency Ranges — MHz	406-420, 450-512	406-420, 450-512	406-420, 450-512
Insertion loss (desired frequency) — dB	Adjustable 0.5 to 2.0	Adjustable 1.0 to 4.0	Adjustable 1.5 to 6
Attenuation (undesired frequency)	See curves	See curves	See curves
Impedance — ohms	50	50	50
VSWR at resonance (maximum)	1.5 to 1	1.5 to 1	1.5 to 1
Maximum power input (continuous duty) — watts with insertion loss per cavity at:			
0.5 dB	400	400	400
1.0 dB	250	250	250
2.0 dB	150	150	150
Temperature range (for negligible frequency shift) — C°	−30 to +60	−30 to +60	−30 to +60
Cavity electrical length	¾ wavelength	¾ wavelength	¾ wavelength

Mechanical Data

	DB4021-1	DB4021-2	DB4021-3
Materials			
Outer conductor	Aluminum	Aluminum	Aluminum
Inner conductor	Silver plated copper	Silver plated copper	Silver plated copper
Tuning rod	Invar	Invar	Invar
End plates	Aluminum	Aluminum	Aluminum
Coupling loops	Copper	Copper	Copper
Dimensions — in. (mm)			
Individual cavity	5 (127) dia.×21 (533.4)	5 (127) dia.×21 (533.4)	5 (127) dia.×21 (533.4)
Maximum, outside (with tuning rod extended)	7 (177.8)×6 (152.4) ×27 (685.8)	7 (177.8)×13 (330.2) ×27 (685.8)	7 (177.8)×19 (482.6) ×27 (685.8)
Connector terminations	UHF Female	UHF Female	UHF Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	5 (2.27)	13 (5.9)	20 (9.07)
Shipping weight — lbs. (kg)	8.5 (3.86)	18 (8.16)	25 (11.34)

DECIBEL

DB4026W BANDPASS CAVITIES 406-512 MHz

The DB4026W is a quarter wavelength, high Q cavity for the 406-512 MHz bands. Installed between the antenna and the transmitter or receiver, the cavity reduces interference that is above and below the desired frequency. See curves.

Dual and triple cavity models are available for improved attenuation of the undesired signal.

Design and Construction

The cavities are tuned to any resonant frequency in the band by turning the threaded Invar rod, which varies the piston length in the center coaxial conductor. Contact is maintained by silver plated beryllium contacts.

The Invar rod, which has almost zero expansion, assures frequency stability over a wide temperature range.

Selectivity is adjustable from the back of each cavity. Rotatable coupling loops can be set to correspond to total attenuations of 0.5 (in single cavities) to 6.0 dB (in 3-cavity models), with minimum attenuation of the desired signal.

Single, dual or triple cavities are shipped on a standard panel for 19″ (482.6 mm) rack mounting.

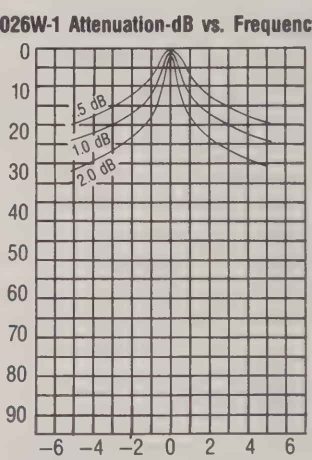
Ordering Information

Please specify exact frequency. Order DB4026W-1 for single, DB4026W-2 for dual, and DB4026W-3 for three cavity models.

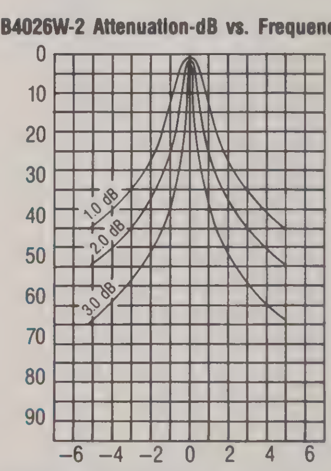
CAN BE SHIPPED UPS.

DB4026W-2 Dual Bandpass Cavity

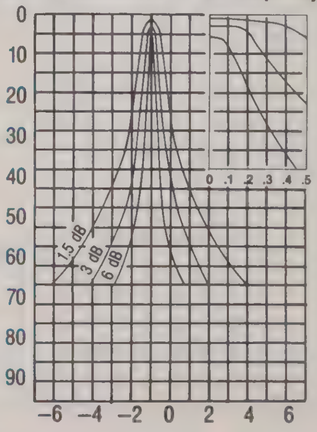
DB4026W-1 Attenuation-dB vs. Frequency-MHz



DB4026W-2 Attenuation-dB vs. Frequency-MHz



DB4026W-3 Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4026W-1	DB4026W-2	DB4026W-3
Frequency Ranges — MHz	406-420, 420-450, 450-470, 470-512	406-420, 420-450, 450-470, 470-512	406-420, 420-450, 450-470, 470-512
Insertion loss (desired frequency) — dB	Adjustable -0.5 to 2.0	Adjustable -1.0 to 4.0	Adjustable -1.5 to 6
Attenuation (undesired frequency)	See curves	See curves	See curves
Impedance — ohms	50	50	50
VSWR at maximum resonance	1.5 to 1	1.5 to 1	1.5 to 1
Maximum power input (continuous duty) — watts	250	250	250
Temperature range (for negligible frequency shift) — C°	−40 to +60	−40 to +60	−40 to +60
Cavity electrical length	¼ wavelength	¼ wavelength	¼ wavelength
Number of cavities	1	2	3

Mechanical Data

	DB4026W-1	DB4026W-2	DB4026W-3
Dimensions (H×W×D) — in. (mm)	5.25 (133.35)× 19 (482.6)× 10.5 (266.7)	5.25 (133.35)× 19 (482.6)× 10.5 (266.7)	5.25 (133.35)× 19 (482.6)× 10.5 (266.7)
Materials			
Outer conductor	Copper	Copper	Copper
Inner conductor	Copper	Copper	Copper
Tuning rod	Invar	Invar	Invar
Coupling loops	Copper	Copper	Copper
Connector terminations	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	7 (3.18)	12 (5.44)	17 (7.71)
Shipping weight — lbs. (kg)	10 (4.54)	15 (6.8)	20 (9.07)

DB4176W, DB4177W DB4195 SHAPE FACTORED FILTERS® 450-512 MHz

DECIBEL

Three models of these SHAPE FACTORED FILTERS® are offered to give broadband responses in the 450-512 MHz frequencies. Each model provides an essentially flat passband with a steep-sloped rejection characteristic to isolate undesired out-of-band frequencies.

Applications

Primarily, the filters are designed to go between a receiver multicoupler and an antenna to prevent intermodulation and receiver desensitization caused by nearby transmitters. In another application the filter goes between a transmitter and a combiner to reduce interference caused by the transmitter noise that would affect nearby receivers.

DB4176W consists of six quarter-wave cavities mounted on two individual panels with three cavities per panel. It provides a passband of 4 MHz or less.

DB4177W has eight quarter-wave cavities mounted on two panels, with four cavities per panel. It provides a passband of 2 MHz or less.

They mount in a standard 19″ (482.6 mm) rack and are tuned at the factory to specific frequencies. They can be retuned in the field with appropriate sweep frequency equipment.

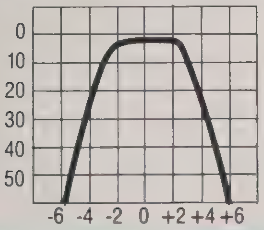
DB4195 employs stripline construction using interdigit technology. Mounting is via tabs provided. For panel mounting, order DB4195-WT panel mounting tray.

Ordering Information

Please specify exact frequencies. Order DB4176W-A or DB4176W-B for a passband of 4 MHz or less, DB4177W for a passband of 2 MHz or less, and DB4195 for a passband of 4 MHz or less.

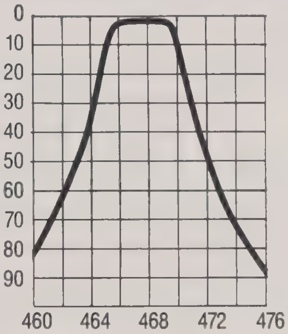
CAN BE SHIPPED UPS.

DB4195 Attenuation-dB vs. Frequency-MHz

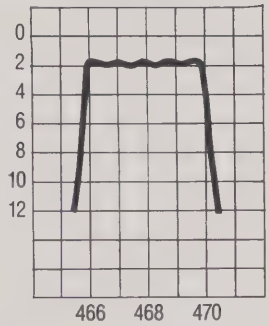


DB4177W SHAPE FACTORED FILTERS®

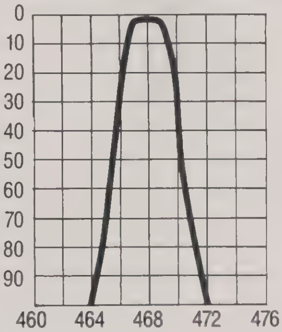
DB4176 Attenuation-dB vs. Frequency-MHz



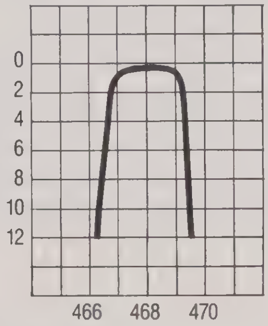
DB4176 Passband Insertion Loss-dB vs. Frequency-MHz



DB4177 Attenuation-dB vs. Frequency-MHz



DB4177 Passband Insertion Loss-dB vs. Frequency-MHz



SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

Electrical Data

	DB4176W	DB4177W	DB4195
Frequency Range — MHz	A = 450-460 B = 460-470	450-470	450-512
Maximum power input (continuous duty) — watts	300	300	150
Passband — MHz	4 or less	2 or less	4 max.
Insertion loss — dB	2 nominal	2 nominal	2.5
Attenuation at ±5 MHz from center pass frequency — dB	>−50	>−100	>−45
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60
Number of cavity filters	6	8	—

Mechanical Data

	DB4176W	DB4177W	DB4195
Dimensions (D×W×H) — in. (mm)	10.5 (266.7)× 19 (482.6)× 10.5 (266.7)	10.5 (266.7)× 19 (482.6)× 10.5 (266.7)	1 (25.4)× 19 (482.6)× 8.75 (222.25)
Mounting — in. (mm)	19 (482.6) rack mount	19 (482.6) rack mount	19 (482.6) rack mount
Connector terminations	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	32 (14.51)	42 (19.05)	5 (2.27)
Shipping weight — lbs. (kg)	38 (17.24)	48 (21.77)	8 (3.63)

DB4104 DB4140 NOTCH FILTERS FOR INTERFERENCE REJECTION, 30-174 MHz

DECIBEL

DB4140-1
Single Cavity

DB4140-2
Dual Cavity

DB4140-3
Triple Cavity

Decibel's notch filters are high Q band-reject cavity filters. DB4104 series covers the 30-50 MHz band, DB4140 series the 148-174 MHz band. Installed between the antenna and the receiver or transmitter, they reduce interference that is frequency rejectable.

Most models are available with dual or triple cavities — shown by the next to last digit in the model number — for increased rejection.

All notch filters are factory tuned. They can be mounted in any position, and an optional outdoor cabinet is available for the DB4140 series.

Applications

1. In a transmitter circuit to pass the desired frequency while rejecting sideband noise that would cause interference for the receiver.
2. In a receiver circuit to pass the "on frequency" signal to the receiver while rejecting an undesirable transmitter carrier.
3. To provide isolation and allow closer frequency spacing so that more antennas can be used in a vicinity or on the same structure.
4. To reject one of two interfering transmitter carrier frequencies before reaching the receiver, to reduce intermodulation interference.

Minimum separation between the desired and reject frequency depends on frequency band, location of pass frequency above or below reject frequency, and the number of coaxial cavities in the filter network. In selecting filters, use the symmetrical "A" versions unless frequency separation is extremely close. "B" means low frequency pass, "C" means high frequency pass. See charts.

It is important to know the frequency and strength of the interfering signal; however, DB notch filters can be field tuned if measuring equipment is available. Modification kits are also available from the factory to convert "A" to "B", etc.

Ordering Information

Please specify complete model number, also pass and reject frequencies. Cables and mounting rails are included for dual and triple cavity models. For use outdoors, order the optional DB5015 cabinet for the DB4140 series.

Electrical Data

Frequency Range — MHz	
DB4104 series	30-50
DB4140 series	148-174
Insertion loss (typical) at desired frequency	See curves
Attenuation (typical) at undesired frequency	See curves
Nominal impedance — ohms	50
Maximum power input (continuous duty) — watts with total insertion loss of:	
0.5 dB	400
1.0 dB	250
2.0 dB	150
Temperature range (for negligible frequency drift) — C°	–30 to +60
Connectors	UHF-Female
Finish	Decibel Tek Black™

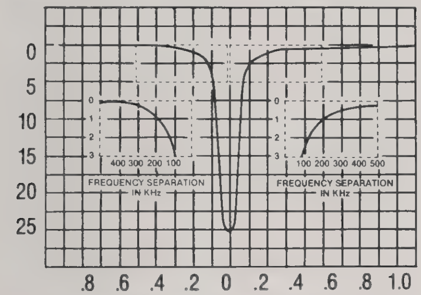
Mechanical Data

Model	Freq. Band — MHz	Cavities	Typical Rej. — dB	Overall Dimensions — in. (mm)	Net Weight — lbs. (kg)	Shipping Weight — lbs. (kg)
DB4104-1A	30-50	1	25	13 (330.2) × 10 (254) × 108 (2,743.2)	24 (10.89)	90 (40.82)
DB4104-2A	30-50	2	50	13 (330.2) × 24 (609.6) × 108 (2,743.2)	48 (21.77)	108 (48.99)
DB4104-1B	30-50	1	23	13 (330.2) × 10 (254) × 108 (2,743.2)	24 (10.89)	90 (40.82)
DB4104-2B	30-50	2	54	13 (330.2) × 24 (609.6) × 108 (2,743.2)	48 (21.77)	108 (48.99)
DB4104-1C	30-50	1	23	13 (330.2) × 10 (254) × 108 (2,743.2)	24 (10.89)	90 (40.82)
DB4104-2C	30-50	2	54	13 (330.2) × 24 (609.6) × 108 (2,743.2)	48 (21.77)	108 (48.99)
DB4140-1A	148-174	1	23	7 (177.8) × 6 (152.4) × 27 (685.8)	6 (2.72)	9 (4.08)
DB4140-2A	148-174	2	52	7 (177.8) × 13 (330.2) × 27 (685.8)	15 (6.8)	22 (9.98)
DB4140-3A	148-174	3	78	7 (177.8) × 19 (482.6) × 27 (685.8)	22 (9.98)	28 (12.7)
DB4140-1B	148-174	1	20	7 (177.8) × 6 (152.4) × 27 (685.8)	6 (2.72)	9 (4.08)
DB4140-2B	148-174	2	43	7 (177.8) × 13 (330.2) × 27 (685.8)	15 (6.8)	22 (9.98)
DB4140-3B	148-174	3	68	7 (177.8) × 19 (482.6) × 27 (685.8)	22 (9.98)	28 (12.7)
DB4140-1C	148-174	1	20	7 (177.8) × 6 (152.4) × 27 (685.8)	6 (2.72)	9 (4.08)
DB4140-2C	148-174	2	43	7 (177.8) × 13 (330.2) × 27 (685.8)	15 (6.8)	22 (9.98)
DB4140-3C	148-174	3	66	7 (177.8) × 19 (482.6) × 27 (685.8)	22 (9.98)	28 (12.7)

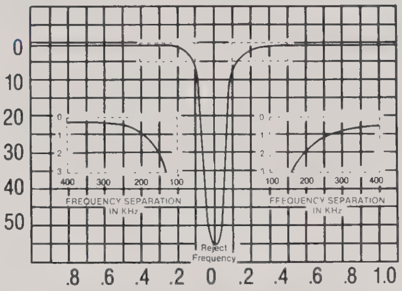
DB4104 DB4140 NOTCH FILTERS CONTINUED

Typical Selectivity Characteristics of DB4104 and DB4140 Notch Filters

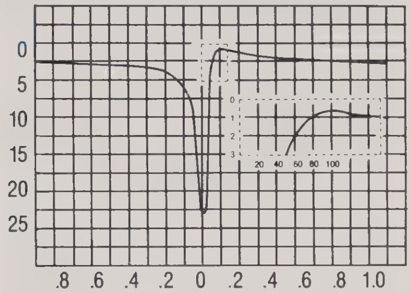
DB4104-1A Single Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



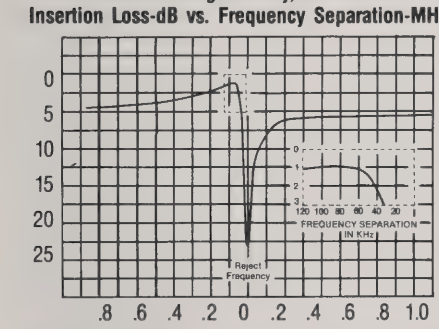
DB4104-2A Two Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



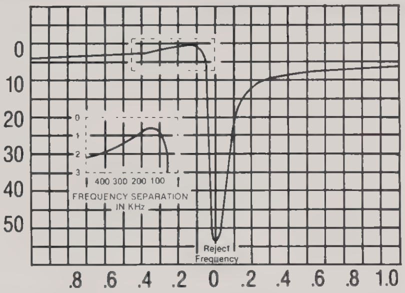
DB4104-1C Single Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



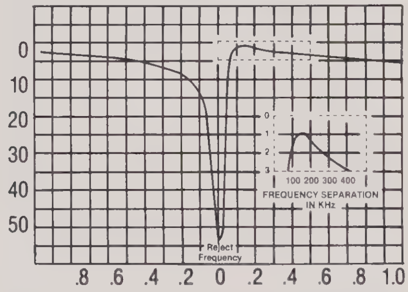
DB4104-1B Single Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



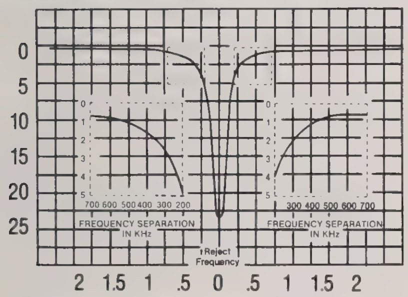
DB4104-2B Two Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



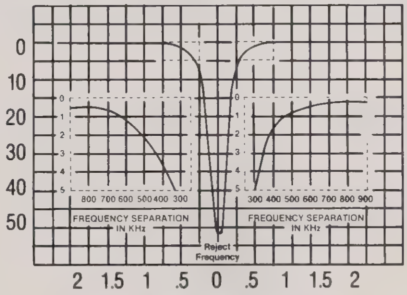
DB4104-2C Two Cavity, 30-50 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



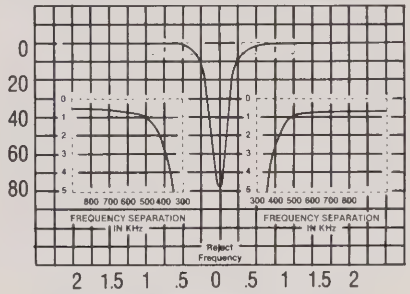
DB4140-1A Single Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



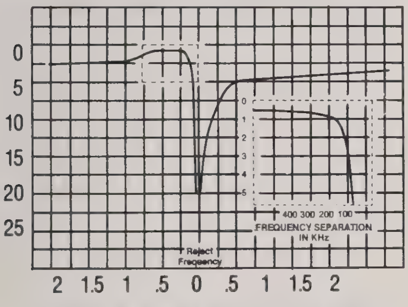
DB4140-2A Two Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



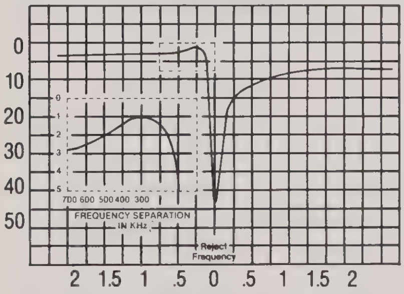
DB4140-3A Three Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



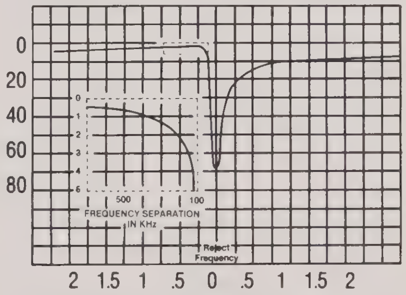
DB4140-1B Single Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



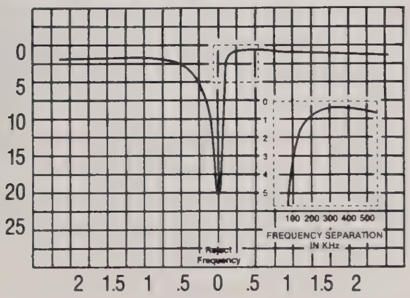
DB4140-2B Two Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



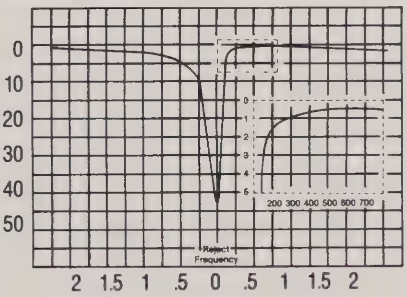
DB4140-3B Three Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



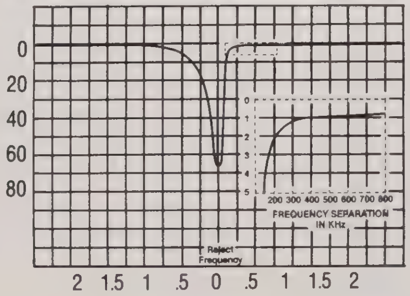
DB4140-1C Single Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



DB4140-2C Two Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



DB4140-3C Three Cavity, 148-174 MHz
Insertion Loss-dB vs. Frequency Separation-MHz



DB4175 NOTCH FILTERS INTERFERENCE REJECTION, 450-512 MHz

Decibel's notch filters are high Q band-reject cavity filters for 450-512 MHz frequencies. Installed between the antenna and the receiver or transmitter, they reduce frequency rejectable/interference.

These filters are also available with dual or triple cavities — shown by the next to last digit in the model number — for increased rejection. All notch filters are factory tuned.

Electrical Data

Frequency Range DB4175 — MHz	450-512
Insertion loss (typical) at desired frequency	See curves
Attenuation (typical) at undesired frequency	See curves
Nominal impedance — ohms	50
Maximum power input (continuous duty) — watts with total insertion loss of:	
0.5 dB	400
1.0 dB	250
2.0 dB	150
Temperature range (for negligible frequency drift) — C°	−30 to +60
Connectors	UHF Female
Finish	Decibel Tek Black™

Applications

1. In a transmitter circuit to pass the desired frequency while rejecting side-band noise that would cause interference for the receiver.
2. In a receiver circuit to pass the "on frequency" signal to the receiver while rejecting an undesirable Tx carrier.
3. To provide isolation and allow closer frequency spacing so more antennas can be used on the same structure/or location.
4. To reject one of two interfering transmitter carrier frequencies before reaching the receiver, to reduce intermodulation interference.

Minimum separation between the desired and reject frequency depends on frequency band, location of pass frequency above or below reject frequency, and the number of coaxial cavities in the filter network. In selecting filters, use the symmetrical "A" version. If frequency separation is extremely close use "B" (low pass) or "C" (high pass), in 2 or 3 cavity models. See curves.

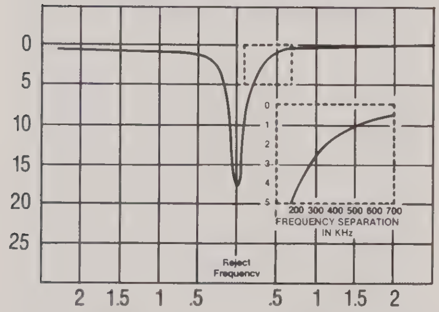
Decibel's notch filters can be field tuned if measuring equipment is available. Modification kits are also available from the factory to convert "A" to "B", etc.

Ordering Information

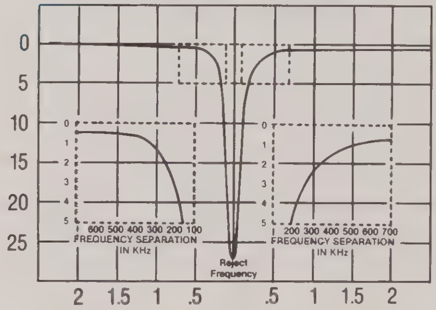
Please specify complete model number, also pass and reject frequencies. Cables and mounting rails are included in −2 and −3 models. For use outdoors, order the optional DB5015 cabinet.

CAN BE SHIPPED UPS.

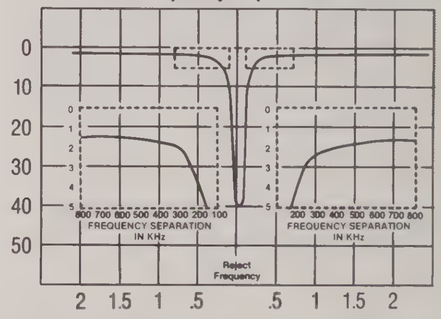
DB4175-1A (High Pass) Attenuation-dB vs. Frequency Separation-MHz



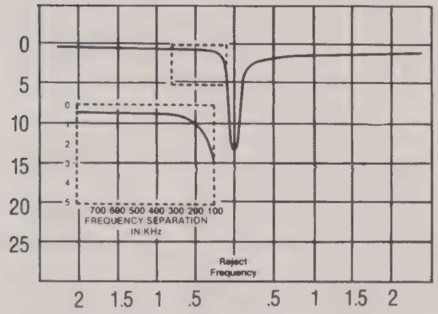
DB4175-2B (Symetric) Attenuation-dB vs. Frequency Separation-MHz



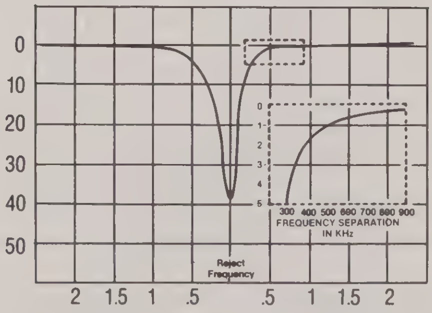
DB4175-3B (Symetric) Attenuation-dB vs. Frequency Separation-MHz



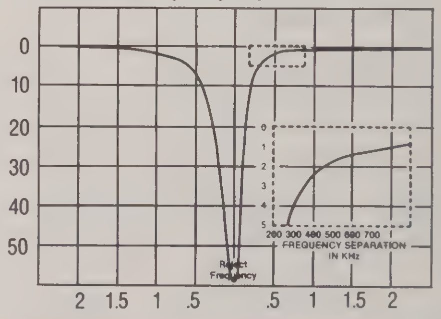
DB4175-1B (Low Pass) Attenuation-dB vs. Frequency Separation-MHz



DB4175-2C (High Pass) Attenuation-dB vs. Frequency Separation-MHz



DB4175-3C (High Pass) Attenuation-dB vs. Frequency Separation-MHz



Mechanical Data

Model	Freq. Band — MHz	Cavities	Typical Rej. — dB	Overall Dimensions — in. (mm)	Net Weight — lbs. (kg)	Shipping Weight — lbs. (kg)
DB4175-1A	450-512	1	17	7 (177.8) × 6 (152.4) × 26 (660.4)	6 (2.72)	9 (4.08)
DB4175-2C	450-512	2	39	7 (177.8) × 13 (330.2) × 26 (660.4)	15 (6.8)	22 (9.98)
DB4175-3C	450-512	3	60	7 (177.8) × 19 (482.6) × 26 (660.4)	22 (9.98)	28 (12.7)
DB4175-1B	450-512	1	13	7 (177.8) × 6 (152.4) × 26 (660.4)	6 (2.72)	9 (4.08)
DB4175-2B	450-512	2	27	7 (177.8) × 13 (330.2) × 26 (660.4)	15 (6.8)	22 (9.98)
DB4175-3B	450-512	3	40	7 (177.8) × 19 (482.6) × 26 (660.4)	22 (9.98)	28 (12.7)
DB5015 Cabinet for DB4175 Series				30 (762) × 19.5 (495.3) × 7.5 (190.5)	28 (12.7)	34 (15.42)

DB4022W BANDPASS REJECT FILTER 450-512 MHz

DECIBEL

DB4022W Dual Cavity Filter

The DB4022W is a quarter wavelength coaxial bandpass reject cavity for the 450-512 MHz band. Installed between the antenna and the transmitter or receiver, it reduces frequency rejectable interference.

A dual cavity configuration is available, interconnected in a bandpass reject configuration with double shielded Teflon dielectric coaxial cable.

Design and Construction

The cavities are tuned to any resonant frequency in the band by turning the threaded Invar rod, which varies the piston length in the center coaxial conductor. Contact is maintained by an indented ring with spring compression.

The Invar rod, which has almost zero expansion, assures frequency stability over a wide range of temperatures.

A factory-tuned capacitor controls the frequency separation between reject and pass frequency. It can be retuned in the field with basic measuring equipment.

A special notch circuit enhances bandpass rejection, providing additional isolation at ±3 MHz or more from the pass frequency. This provides protection against transmitter noise and intermodulation generated by the transmitter, also it can reduce interference from nearby transmitters and receiver intermodulation.

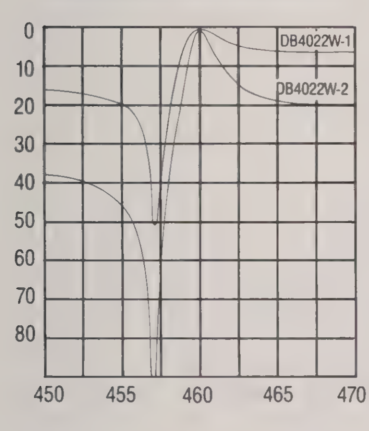
Single or dual cavities are shipped on a panel for 19″ (482.6 mm) rack mounting.

Ordering Information

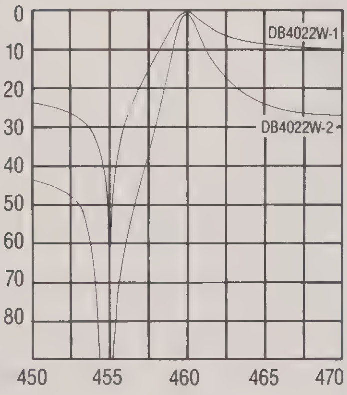
Please specify exact pass and reject frequency. Order DB4022W-1 single or DB4022W-2 dual cavity.

CAN BE SHIPPED UPS.

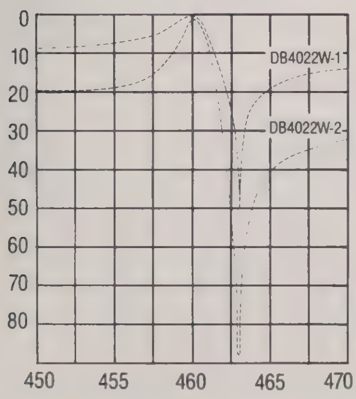
3 MHz Frequency Separation
Attenuation-dB vs. Frequency-MHz



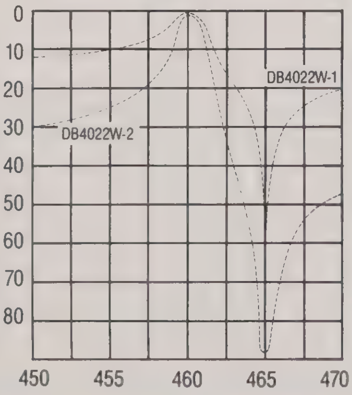
5 MHz Frequency Separation
Attenuation-dB vs. Frequency-MHz



Attenuation-dB vs. Frequency-MHz



Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4022W-1	DB4022W-2
Frequency Ranges — MHz	450-470, 470-492, 492-512	450-470, 470-492, 492-512
Insertion loss at pass frequency — dB	.65	1.3
Attenuation at reject frequency — dB		
At 3 MHz frequency separation	50	100
At 5 MHz frequency separation	55	100
Impedance — ohms	50	50
VSWR at pass frequency (maximum)	1.5 to 1	1.4 to 1
Maximum power input — watts	250	250
Temperature range — C°	−30 to +60	−30 to +60

Mechanical Data

Dimensions (H×W×D) — in. (mm)	5.25 (133.35)×19 (482.6)×10.5 (266.7)
Mounting — in. (mm)	19 (482.6) rack
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	
DB4022W-1	7 (3.18)
DB4022W-2	12 (5.44)
Shipping weight — lbs. (kg)	
DB4022W-1	10 (4.54)
DB4022W-2	15 (6.8)

DB4044 DB4046 BANDPASS DUPLEXER 148-174 MHz

These bandpass duplexers allow simultaneous transmitter and receiver operation in a broad band antenna system. They are particularly useful in frequency congested areas.

They isolate the receiver from its associated transmitter and provide some degree of protection to the receiver from other transmitters in the area. Transmitter noise is reduced at the receive and other frequencies.

Two Models

DB4044 has four cavities, two for transmit and two for receive, and is suitable for 4 MHz or more separation.

DB4046 has six cavities, three for transmit and three for receive, and is suitable for 3 MHz or more separation.

Both models handle most tube and solid state systems. They can be mounted on any flat surface or in standard 19″ (483 mm) racks. Weather resistant cabinets are optional for outdoor use.

The duplexers can be tuned to any two frequencies in the 148-174 MHz band by turning the threaded rod, which varies the piston length in the center coaxial conductor. Selectivity is adjustable from the front of the cavities via rotatable coupling loops.

An Invar rod, with nearly zero expansion, assures frequency stability over a wide temperature range.

DB4044 Bandpass Duplexer

Ordering Information

Please specify exact transmit and receive frequencies. Order DB4044 for 4 MHz separation or DB4046 for 3 MHz separation. Mounting Rails are included. Cables to connect the duplexer to the transmitter or reciever must be ordered separately. For outdoor use, order DB5017 Cabinet for either model.

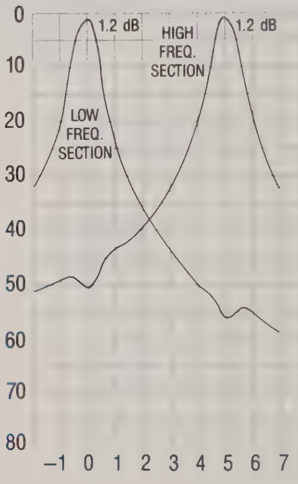
Electrical Data

	DB4044	DB4046
Frequency Range — MHz Frequency separation — MHz	148-174 4 or more	148-174 3 or more
Maximum power input (continuous duty) with .5 dB loop setting, each cavity — watts	400	400
Insertion loss (transmitter to antenna) — dB Insertion loss (receiver to antenna) — dB	1.2 1.2	1.7 1.7
Transmitter noise suppression at receive frequency — dB	45@4 MHz 50@5 MHz	55@3 MHz 72@5 MHz
Receiver isolation at transmit frequency — dB	45@4 MHz 50@5 MHz	55@3 MHz 72@5 MHz
Maximum VSWR (referenced to 50 ohms) Temperature range — C° Number of cavity filters	1.5 to 1 −30 to +60 4	1.5 to 1 −30 to +60 6

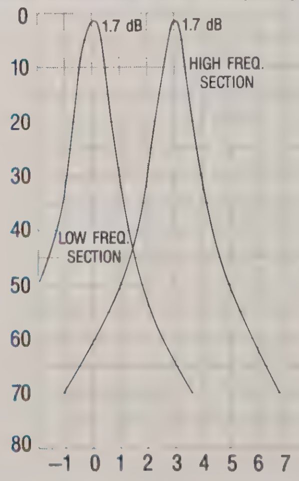
Mechanical Data

	DB4044	DB4046
Dimensions (D×W×H) with tuning rods fully extended — in. (mm)	7 (177.8)×25 (635)×27 (685.8)	14 (355.6)×19 (482.6)×27 (685.8)
Connector terminations Finish	UHF Female Decibel Tek Black™	UHF Female Decibel Tek Black™
Net weight — lbs. (kg) Shipping weight — lbs. (kg)	27 (12.25) 33 (14.97)	36 (16.33) 70 (31.75)
Optional cabinet	DB5017	DB5017
Cabinet dimensions (D×W×H) — in. (mm)	14 (355.6)×19.25 (488.95)×30 (762)	14 (355.6)×19.25 (488.95)×30 (762)
Net weight (cabinet only) — lbs. (kg) Shipping weight (cabinet only) — lbs. (kg)	48 (21.77) 73 (33.11)	48 (21.77) 73 (33.11)

DB4044 Attenuation-dB vs. Frequency-MHz



DB4046 Attenuation-dB vs. Frequency-MHz



DB4030A DB4032A BAND REJECT DUPLEXER 30-50 MHz

DECIBEL

Designed for duplex systems in the 30-50 MHz band, these band-reject duplexers isolate the receiver from the transmitter and reduce transmitter noise.

They use compact, quarter-wave high performance helical resonators that are interconnected in a band-reject configuration with double shielded cable.

Two Models

DB4030A has four cavities, two for transmit and two for receive. It is suitable for systems with 1.5 MHz or more of separation between transmit and receive.

DB4032A has six cavities, three for transmit and three for receive. It is suitable for systems with 0.5 MHz or more of separation. Under certain conditions, this duplexer can be used to couple two transmitters, two receivers or two simplex stations into a common antenna.

Both models handle most tube and solid state systems. They are temperature compensated and will provide power up to 150 watts, even at extreme temperatures.

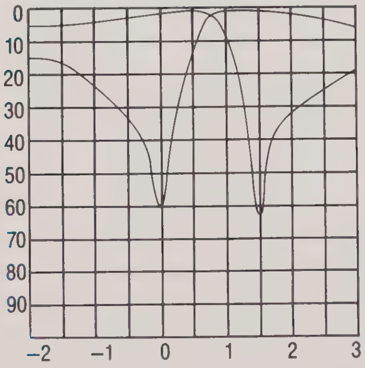
The duplexers are factory tuned and shipped ready to install. The cabinet is included.

Ordering Information

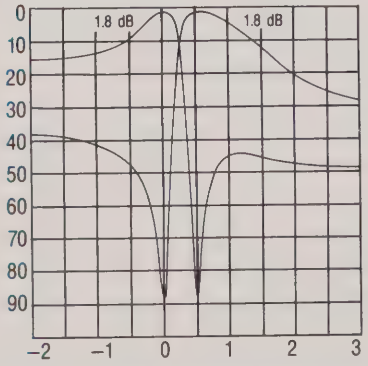
Please specify exact transmit and receive frequencies. Order DB4030A for 1.5 MHz separation, DB4032A for 0.5 MHz of separation.

DB4032A Band Reject Duplexer

DB4030A Attenuation-dB vs. Frequency-MHz



DB4032A Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4030A	DB4032A
Frequency Range — MHz	30-50	30-50
Frequency separation — MHz	1.5 or more	0.5 or more
Maximum power input (continuous) — watts	150	150
Insertion loss (transmitter to antenna) — dB	1.5	2.0
Insertion loss (receiver to antenna) — dB	1.5	2.0
Transmitter noise suppression at receiver frequency — dB	55	80
Receiver isolation at transmit frequency — dB	55	80
Maximum VSWR (referenced to 50 ohms)	1.5 to 1	1.5 to 1
Temperature range — C°	–30 to +60	–30 to +60
Number of cavity filters	4	6

Mechanical Data

	DB4030A	DB4032A
Cabinet dimensions:		
Height — in. (mm)	30 (762)	30 (762)
Width — in. (mm)	19.25 (488.95)	19.25 (488.95)
Depth — in. (mm)	7.38 (187.45)	7.38 (187.45)
Connector terminations	UHF Female	UHF Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	67 (30.39)	75 (34.02)
Shipping weight — lbs. (kg)	77 (34.93)	90 (40.82)

DB4054, DB4055 DB4056 BAND REJECT DUPLEXERS 150-174 MHz

DECIBEL

DB4056
Band Reject
Duplexer
Rear View
Shows
Tuning Access

Three models of this high performance, compact base station duplexer are offered for the 150-174 MHz bands. They isolate the receiver from the transmitter and reduce transmitter noise.

They use quarter-wave helical resonators, interconnected in a band reject configuration with double shielded, Teflon dielectric cable.

Three Models

DB4054 is a 4-cavity duplexer with two cavities for transmit and two for receive. Separation between receive and transmit can be 5 MHz or more.

DB4055 is a 5-cavity duplexer with three cavities for transmit and two for receive. Separation can be 5 MHz or more. It is similar to the DB4054, but designed for stations requiring greater isolation.

DB4056 is a 6-cavity duplexer with three cavities for transmit and three for receive. Separation can be 2 MHz or more.

All models are suitable for most tube and solid state stations. They can be operated at greater separation.

The duplexers are tuned at the factory; however, they can be retuned in the field. Measuring equipment is required.

They can be mounted vertically or horizontally on any flat surface or in a standard 19″ (482.6 mm) rack. A multiposition bracket allows mounting to the front, center or back of the rack.

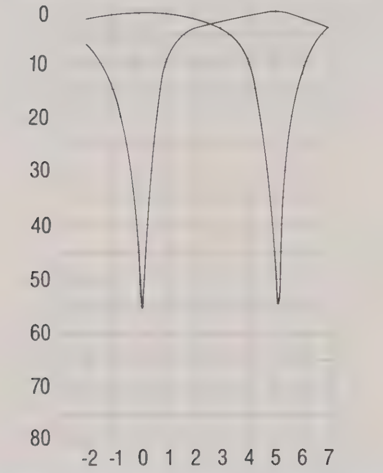
Under certain conditions the DB4055 and DB4056 are suitable for coupling two transmitters, two receivers or two simplex stations into a common antenna.

Ordering Information

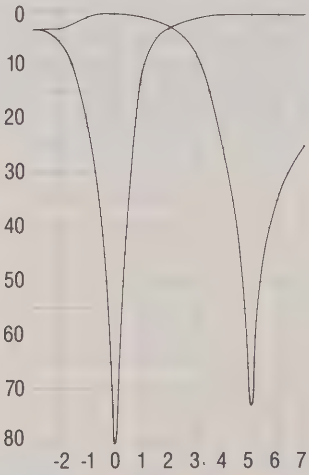
Please specify exact transmit and receive frequencies. Order DB4054 for the 4-cavity duplexer (5 MHz or more separation), DB4055 for the 5-cavity (5 MHz or more separation), and DB4056 for 6-cavity duplexer (2 MHz or more separation).

CAN BE SHIPPED UPS.

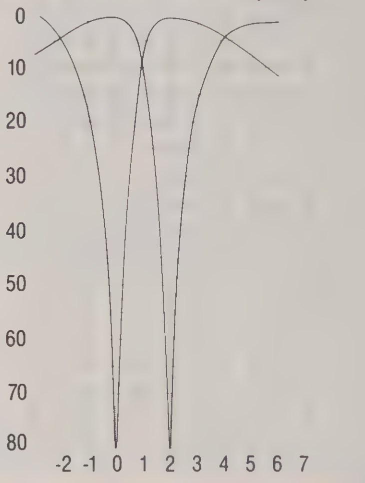
DB4054 Attenuation-dB vs. Frequency-MHz



DB4055 Attenuation-dB vs. Frequency-MHz



DB4056 Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4054	DB4055	DB4056
Frequency Ranges — MHz	A = 150-162, B = 160-174	A = 150-160, B = 160-174	A = 133-142, B = 142-150, C = 150-162, D = 160-174
Frequency separation — MHz	5 or more	5 or more	2 or more
Maximum power input (continuous duty) — watts	150	150	150
Insertion loss (transmitter to antenna and receiver to antenna) — dB			
at 2 MHz separation	N/A	N/A	1.4
at 5 MHz separation	0.7	0.7	0.7
Transmitter noise suppression at receive frequency — dB	45	70	70
Receiver isolation at transmit frequency — dB	45	70	70
Maximum VSWR (referenced to 50 ohms)	1.5 to 1	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60
Number of cavity filters	4	5	6

Mechanical Data

	DB4054	DB4055	DB4056
Dimensions (H×W×D) — in. (mm)	3.5 (88.9)×19 (482.6)×7 (177.8)	3.5 (88.9)×19 (482.6)×7 (177.8)	3.5 (88.9)×19 (482.6)×7 (177.8)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack	19 (482.6) rack
Connector terminations	UHF Female	UHF Female	UHF Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	10 (4.54)	11 (4.99)	12 (5.44)
Shipping weight — lbs. (kg)	12 (5.44)	13 (5.9)	14 (6.35)

DB4057W DB4058W BANDPASS REJECT DUPLEXERS 150-174 MHz

DECIBEL

DB4057W Bandpass Reject Duplexer

Two models of this high performance, compact base station duplexer are offered for the 150-162 and 160-174 MHz bands. They isolate the receiver from the transmitter and reduce transmitter noise.

The all copper cavities use soldered quarter-wave helical resonators, interconnected in a bandpass reject configuration with double shielded Teflon dielectric cable. They have excellent frequency stability and handle transmitter powers to 150 watts. A high quality, tunable capacitor is used in each cavity to generate the reject frequency.

Two Models

DB4057W is a 3-cavity duplexer with two cavities for transmit and one for receive. Separation between receive and transmit can be 5 MHz or more.

DB4058W is a 4-cavity duplexer with two cavities for transmit and two for receive. Separation can be 3 MHz or more.

Both models are suitable for most tube and solid state stations. They can be operated at greater separation. Rejection will remain the same while transmitter and receiver losses will be less.

The duplexers are tuned at the factory and shipped ready to install. However, they can be retuned in the field to new frequencies within the band; measuring equipment is required.

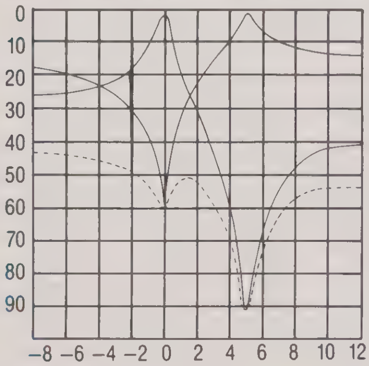
They can be mounted vertically or horizontally on any flat surface or in a standard 19″ (482.6 mm) rack.

Ordering Information

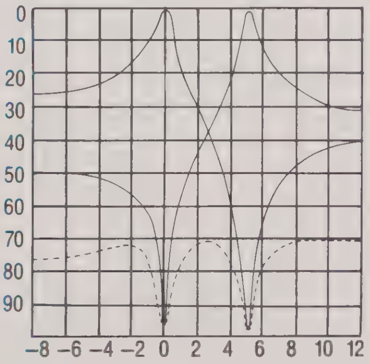
Please specify exact transmit and receive frequencies. Order DB4057W for the 3-cavity duplexer (5 MHz or more separation), DB4058W for the 4-cavity duplexer (3 MHz or more separation).

CAN BE SHIPPED UPS.

DB4057W Attenuation-dB vs. Frequency-MHz



DB4058W Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4057W	DB4058W
Frequency Ranges — MHz	A = 150-162 B = 160-174	A = 150-162 B = 160-174
Frequency separation — MHz	5 or more	3 or more
Maximum power input (continuous duty) — watts	150	150
Insertion loss (transmitter to antenna and receiver to antenna) — dB		
at 3 MHz separation	—	1.5
at 5 MHz separation	1.5	1.5
Transmitter noise suppression at receive frequency — dB	86	86
Receiver isolation at transmit frequency — dB	50	86
Isolation (minimum) transmitter to receiver — dB		
at 3 MHz separation	—	60
at 5 MHz separation	40	70
Maximum VSWR (referenced to 50 ohms)	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60
Number of cavity filters	3	4

Mechanical Data

	DB4057W	DB4058W
Dimensions (H×W×D) — in. (mm)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	18 (8.16)	22 (9.98)
Shipping weight — lbs. (kg)	21 (9.53)	25 (11.34)

DB4067, DB4068 DB4071, DB4072 BAND REJECT DUPLEXERS 406-512 MHz

DECIBEL

DB4067 Band Reject Duplexer

Four models of this high performance, compact base station duplexer are offered for 406-430 and 450-512 MHz bands. Designed for the newest solid state transmitters as well as tube systems, the duplexers isolate the receiver from the transmitter and reduce transmitter noise.

They use quarter-wave coaxial cavities interconnected in a band reject configuration with double shielded, Teflon dielectric cable. Frequency stability over a wide temperature range is achieved by using an Invar tuning rod - with almost no expansion - in each cavity.

Four Models

DB4067 is a 4-cavity duplexer with two cavities for transmit and two for receive. It operates in the 406-430 MHz band. Separation between receive and transmit can be 5 MHz or more.

DB4068 is a 6-cavity duplexer with three cavities for transmit and three for receive. It operates in the 406-430 MHz band. Separation between receive and transmit can be 2.75 MHz or more.

DB4071 is a 4-cavity duplexer with two cavities for transmit and two for receive. It operates in the 450-470 MHz band. Separation between receive and transmit can be 5 MHz or more.

DB4072 is a 6-cavity duplexer with three cavities for transmit and three for receive. It operates in the 450-470, 470-488 and 488-512 MHz frequencies. Separation between receive and transmit can be 2.75 MHz or more.

All models can be operated at greater separation. Rejection will remain the same while transmitter and receiver losses will be less.

The duplexers are tuned at the factory and shipped ready to install. However, they can be retuned in the field to new frequencies within the band. Measuring equipment is required.

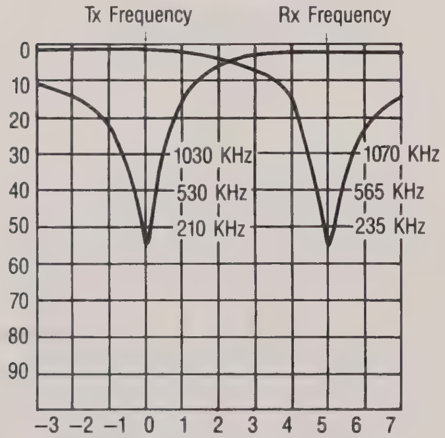
They can be mounted vertically or horizontally on any flat surface or in standard 19″ (482.6 mm) racks. A multi-position bracket allows mounting to the front, center or back of the rack.

Ordering Information

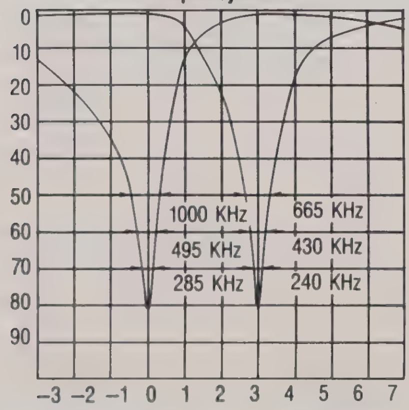
Please specify the exact frequency of the transmitter and receiver. Order DB4067 4-cavity duplexer for 406-430 MHz, DB4068 6-cavity for 406-430 MHz, DB4071 4-cavity for 450-470 MHz, DB4072A 6-cavity for a 450-470 MHz, DB4072B 470-488 MHz, or DB4072C 450-512 MHz.

CAN BE SHIPPED UPS.

DB4067 and DB4071 Attenuation-dB vs. Frequency-MHz



DB4068 and DB4072 Insertion Loss-dB vs. Frequency-MHz



Electrical Data

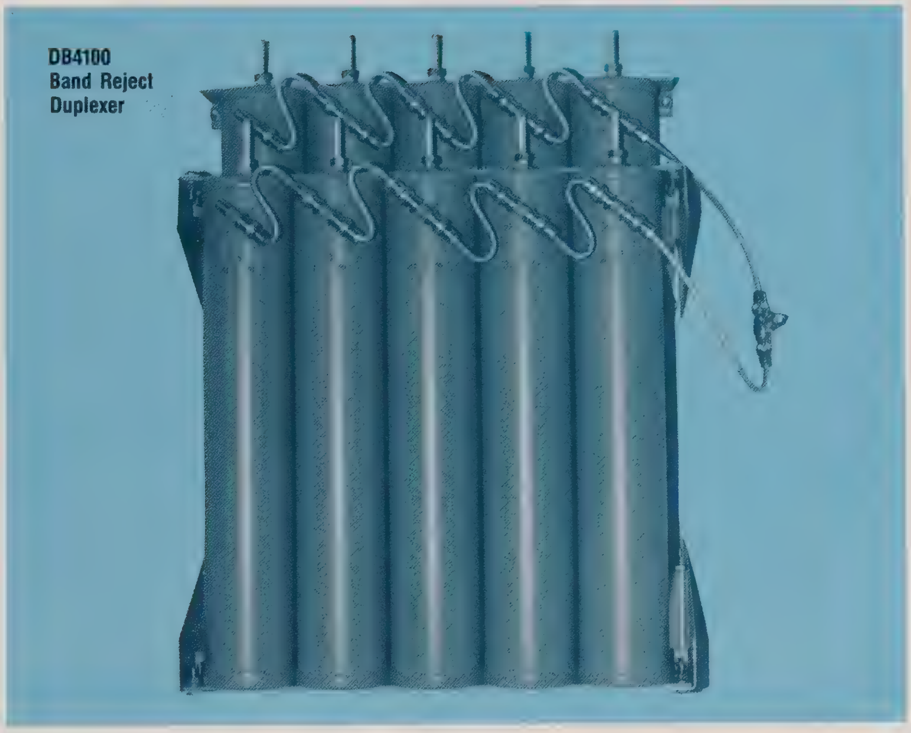
	DB4067	DB4068	DB4071	DB4072
Frequency Ranges — MHz	406-430	406-430	450-470	A = 450-470 B = 470-488 C = 488-512
Frequency separation — MHz	5 or more	2.75 or more	5 or more	2.75 or more
Maximum power input (continuous duty) — watts	250	250	250	250
Insertion loss (transmitter to antenna and receiver to antenna) — dB				
at 2.75 MHz separation	N/A	1.3	N/A	1.3
at 3.5 MHz separation	N/A	1.0	N/A	1.0
at 5.0 MHz separation	0.7	0.8	0.8	0.8
Transmitter noise suppression at receive frequency — dB	50*	75*	52	75
Receiver isolation at transmit frequency — dB	45*	70*	52	75
Maximum VSWR (referenced to 50 ohms)	1.5 to 1	1.5 to 1	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60
Number of cavity filters	4	6	4	6

*Assumes Tx frequency to be lower than Rx frequency. Reverse values if Tx frequency is high.

Mechanical Data

	DB4067	DB4068	DB4071	DB4072
Dimensions (H×W×D) — in. (mm)	3.5 (88.9)× 19 (482.6)× 9.5 (241.3)	3.5 (88.9)× 19 (482.6)× 9.5 (241.3)	3.5 (88.9)× 19 (482.6)× 9.5 (241.3)	3.5 (88.9)× 19 (482.6)× 9.5 (241.3)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack	19 (482.6) rack	19 (482.6) rack
Connector terminations	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	14 (6.35)	18 (8.16)	14 (6.35)	17 (7.71)
Shipping weight — lbs. (kg)	16 (7.26)	20 (9.07)	16 (7.26)	19 (8.62)

DB4100 BAND REJECT DUPLEXER 216-220 MHz


DB4100
Band Reject
Duplexer

The DB4100 duplexer permits simultaneous transmitter and receiver operation on a single antenna in the 216-220 MHz frequency band.

The unit is factory tuned and shipped ready for installation. It can be mounted horizontally or vertically with the input connectors up, down or to either side.

Design and Construction

The DB4100 consists of 10 aluminum cavity notch filters, each 3″ (76.2 mm) in diameter. Five filters are for transmit and five are for receive, all coupled to a common antenna port.

The five filters in the high-power transmit leg allow signals in the 219-220 MHz band to pass to the combined port with a minimum of insertion loss. The reject frequencies of the filters are stagger-tuned to provide at least 70 dB attenuation of the transmitter side-band noise to the 217-218 MHz receive band.

The five filters in the receive leg are tuned to pass signals in the 217-218 MHz band from the combined antenna port to the receiver low pass output port. The receiver filters are stagger-tuned to reject transmitter carrier frequencies in the 219-220 MHz band by at least 70 dB.

Insertion loss in either the transmit or receive path for the appropriate pass bands is 1.8 dB.

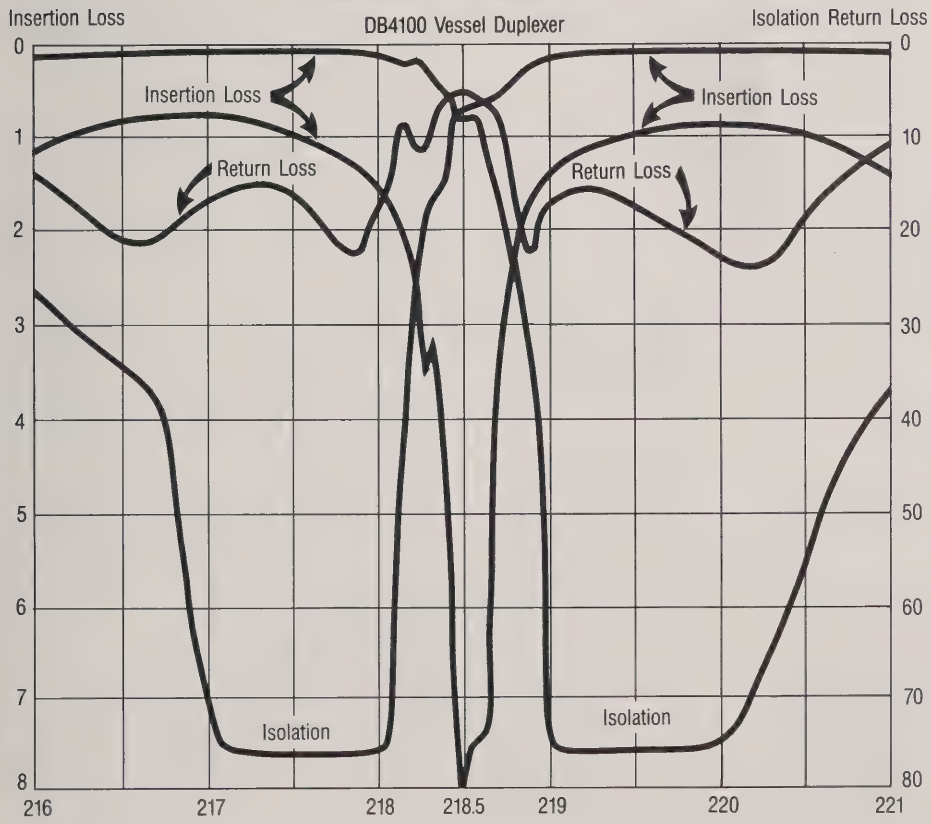
Each cavity is tuned by turning a threaded rod that varies the piston length in the center coaxial conductor. Made of Invar, which has almost no expansion, the rods assure frequency stability over a wide range of temperatures.

Galvanic corrosion is minimized by using similar materials or by plating or chemical conversion treatment.

Ordering Information

Order DB4100 band reject duplexer. Cabling is included. A splash resistant cover is available.

Insertion Loss-dB vs. Return Loss-dB
Isolation-dB vs. Frequency-MHz

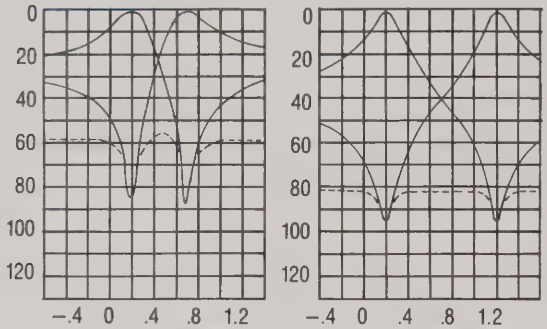


Electrical Data	
Frequency Range — MHz	216-220
Frequency separation — MHz	1
Maximum power input — watts	150
Insertion loss — dB	1.8
Transmitter noise suppression in receive band — dB	70
Receiver isolation of transmit band — dB	70
VSWR (referenced to 50 ohm) maximum	1.5 to 1
Temperature range — C°	−30 to +60
Number of cavity filters	10

Mechanical Data	
Dimensions — in. (mm)	
Height	24 (609.6)
Width	24 (609.6)
Depth	8.2 (207.96)
Connector terminations	N-Female (cabinet) BNC-Female (cavities)
Net weight — lbs. (kg)	41 (18.6)
Shipping weight — lbs. (kg)	68 (30.84)

DB4060 DB4062 BANDPASS REJECT DUPLEXER 138-174 MHz

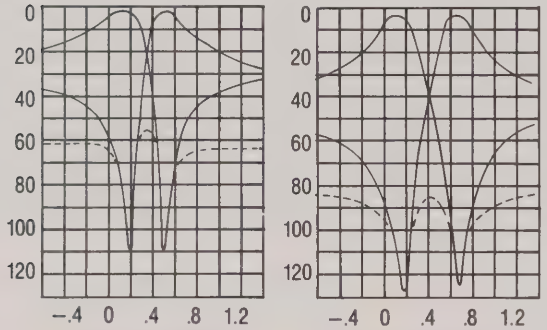
DB4060 4-Cavity Duplexer
Attenuation-dB vs. Frequency-MHz



0.5 MHz Separation

1.0 MHz Separation

DB4062 6-Cavity Duplexer
Attenuation-dB vs. Frequency-MHz



0.3 MHz Separation

0.5 MHz Separation

DB4060 Bandpass Reject Duplexer

Designed for duplex systems that operate with close frequency spacing in the 138-174 MHz frequencies, these duplexers provide 80 or 100 dB transmitter noise suppression at the receive frequency, and 80 or 100 dB receiver isolation at transmit frequency.

They consist of 8″ (203.2 mm) diameter quarter-wave coaxial cavities, interconnected in a bandpass/band reject configuration using double shielded coaxial cable.

Frequency stability over a wide temperature range is achieved by using a threaded Invar rod — with almost no expansion — to control the length of the center conductor in each cavity.

Two Models

The DB4060 is a 4-cavity duplexer with two cavities for transmit and two for receive. Separation between transmit and receive can be 0.5 MHz or more.

DB4062 is a 6-cavity duplexer with three cavities for transmit and three for receive. Separation can be 0.3 MHz or more.

Both models are suitable for all types of base station equipment. They can be used at wider frequency separations and still furnish the same bandpass/band reject characteristics.

The duplexers may be used to couple two transmitters, two receivers or two simplex stations into a common antenna, when the two frequencies are separated by 0.5 MHz or more, 0.3 MHz or more.

Ordering Information

Please specify exact transmit and receive frequencies. Order DB4060 for the 4-cavity duplexer (0.5 MHz or more separation), DB4062 for the 6-cavity (0.3 MHz or more separation). To connect the duplexer with the receiver and the transmitter, double shielded cable kit No. 11621 is available as an option.

A cabinet option is available. Add WC, with cabinet, when ordering.

Electrical Data

	DB4060	DB4062
Frequency Range — MHz	138-174	138-174
Frequency separation — MHz	0.5 or more	0.3 or more
Maximum power input (continuous duty) — watts	400	400
Insertion loss (transmitter to antenna and receiver to antenna) — dB		
at 0.3 MHz separation	—	2.2
at 0.5 MHz separation	1.5	—
Transmitter noise suppression at receiver frequency — dB	80	100
Receiver isolation at transmit frequency — dB	80	100
Maximum VSWR (referenced to 50 ohms)	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60
Number of cavity filters	4	6

Mechanical Data

	DB4060	DB4062
Cabinet dimensions (D×W×H) — in. (mm)	19.25 (488.95)×20.125 (511.18)×34.5 (876.3)	19.25 (488.95)×29 (736.6)×34.5 (876.3)
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	105 (47.63)	130 (58.97)
Shipping weight — lbs. (kg)	130 (58.97)	160 (72.57)

DB4075W BANDPASS REJECT DUPLEXER
DB4076W 406-512 MHz

Two models of this high performance, compact base station duplexer are offered for the 406-420, 450-470, 470-492 and 492-512 MHz bands. They isolate the receiver from the transmitter and reduce transmitter noise.

They use copper quarter-wave helical resonators, interconnected in a bandpass/band reject configuration with double shielded, Teflon dielectric cable. They have excellent frequency stability and handle transmitter powers to 250 watts. A high quality, tunable capacitor is used in each cavity to generate the reject frequency.

Two Models - All copper

DB4075W is a 3-cavity copper duplexer with two cavities for transmit and one for receive. Separation between receive and transmit can be 5 MHz or more.

DB4076W is a 4-cavity copper duplexer with two cavities for transmit, two for receive. Separation can be 3 MHz or more.

Both models are suitable for most tube and solid state stations. They can be operated at greater separation. Rejection will remain the same while transmitter and receiver losses will be less.

The duplexers are tuned at the factory and shipped ready to install. They can be retuned with measuring equipment.

They can be mounted vertically or horizontally on any flat surface or in standard 19″ (482.6 mm) racks.

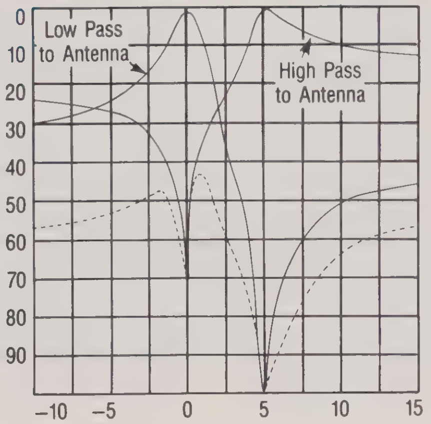
DB4076W Bandpass Reject Duplexer

Ordering Information

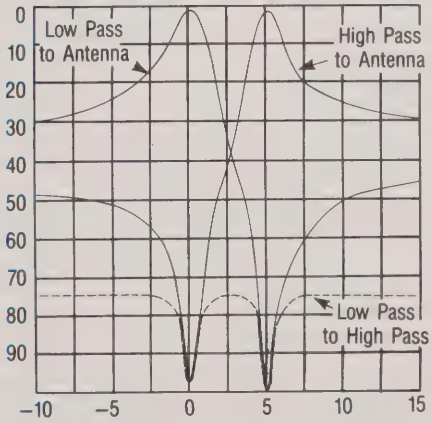
Please specify exact transmit and receive frequencies. Order DB4075W for the 3-cavity duplexer, DB4076W for the 4-cavity duplexer.

CAN BE SHIPPED UPS.

DB4075W Attenuation-dB vs. Frequency-MHz



DB4076W Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4075W	DB4076W
Frequency Ranges — MHz	A = 450-470, B = 470-492, C = 492-512, D = 406-420	A = 450-470, B = 470-492, C = 492-512, D = 406-420
Frequency separation — MHz	5 or more	3 or more
Maximum power input (continuous duty) — watts	250	250
Insertion loss (transmitter to antenna) — dB	1.2	1.2
Insertion loss (receiver to antenna) — dB	0.7	1.2
Transmitter noise suppression at receive frequency — dB	100	100
Receiver isolation at transmit frequency — dB	60	100
Isolation (minimum) transmitter to receiver — dB		
at 5 MHz separation	45	75
at 3 MHz separation	N/A	52
Maximum VSWR (references to 50 ohms)	1.3 to 1	1.3 to 1
Temperature range — C°	−30 to +60	−30 to +60
Number of cavity filters	3	4

Mechanical Data

	DB4075W	DB4076W
Dimensions (H×W×D) — in. (mm)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	17 (7.71)	21 (9.53)
Shipping weight — lbs. (kg)	20 (9.07)	24 (10.89)

DECIBEL

DB4075Z DB4076Z BANDPASS REJECT DUPLEXER 450-512 MHz

DB4075Z 3-Cavity Duplexer

DB4076Z Aluminum Duplexer

Compact aluminum duplexers, the DB4075Z and DB4076Z give excellent receiver protection in the 450-470, 470-488 or 488-512 MHz frequency bands.

They are designed especially for the latest solid state and tube base stations with 3 MHz or more or 5 MHz or more separation between the transmit and receive frequencies.

Design and Construction

The DB4076Z consists of four aluminum quarter-wave coaxial cavities — two for transmit and two for receive — with the outer connector and top and bottom covers made of aluminum. The top cover is welded to the outer conductor for best current distribution. A high quality tunable capacitor is used within each cavity to generate the reject frequency.

The duplexer protects the receiver from its associated transmitter by greater than 85 dB, and the bandpass configuration provides some receiver protection from other transmitters in the area. Transmitter noise coupled to the receiver is reduced at the receive and other frequencies by at least 65 dB.

The duplexer can be used to couple two simplex stations or two transmitters with up to 250 watts input to a common antenna, or to couple two receivers to a common antenna.

A 3-cavity model, DB4075Z, is also available for special applications, with two cavities in the transmit section and one in the receive. It is suitable for some solid state and tube base stations that operate with 5 MHz or more separation between the receive and transmit frequencies. (Call Decibel Systems Engineering.)

Frequency stability is assured by the use of an Invar rod — with almost zero expansion — in each cavity.

The duplexers are tuned at the factory, but can be retuned in the field with appropriate measuring equipment.

Ordering Information

Please specify exact transmit and receive frequencies. Order DB4076Z for systems with 3 MHz or more separation, DB4075Z for 5 MHz or more.

Electrical Data

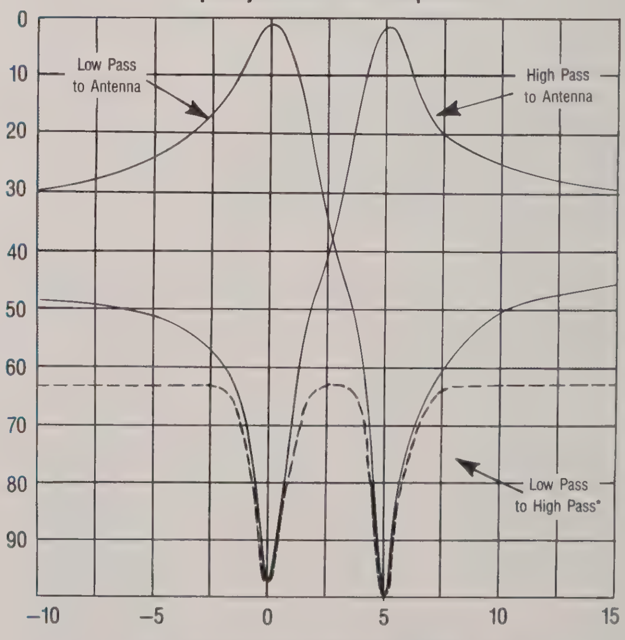
	DB4076Z
Frequency Ranges — MHz	450-470, 470-488, 488-512
Frequency separation — MHz	3.0 or more
Maximum power input (continuous duty) — watts	250
Insertion loss (transmitter to antenna) — dB	1.2
Inserton loss (receiver to antenna) — dB	1.2
Transmitter noise suppression at receive frequency — dB	85
Receive isolation at transmit frequency — dB	85
Isolation (minimum) transmitter to receiver — dB	
At 5 MHz separation	65*
At 3 MHz separation	40*
Maximum VSWR (referenced to 50 ohms)	1.3 to 1
Temperature range — C°	−30 to +60
Number of cavity filters	4

*Isolation between system transmitter and its associated receiver when antenna port is terminated in 50 ohms.

Mechanical Data

Dimensions (H×W×D) — in. (mm)	5.25 (133.35)×19 (482.6)×10.5 (266.7)
Mounting — in. (mm)	19 (482.6) rack
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	21 (9.53)
Shipping weight — lbs. (kg)	24 (10.89)

DB4076Z Attenuation-dB vs. Frequency-MHz at 5 MHz Separation



*Isolation between system transmitter and its associated receiver when antenna port is terminated in 50 ohms.

DB4350 LOW LOSS TRANSMITTER COMBINER 2 to 8 CHANNELS, 118-174 MHz

DECIBEL

Seven models of the DB4350 are offered to combine two through eight transmitters in the 118-174 MHz frequencies at close spacing.

Minimum frequency separation is 50 KHz. However, the greater the frequency separation, the less the insertion loss.

Design and Construction

Between each transmitter and a 5-way or 6-way connector, there is an 11″ (279.4 mm) DB4002B High Q Cavity and a DB4600 Series Dual Junction Isolator. The input junction is terminated with a 30 watt load, the output junction with a 60 watt load.

All channels are brought together at a suitable N-way junction and matched to provide maximum energy transfer to the antenna.

The combiners are tuned at the factory, but, when expanded, new units can be tuned in the field. Because of the ferrite isolator's load, unused channels need no dummy load termination.

The cabinet is included and has heavy duty roller wheels for easy installation and maintenance.

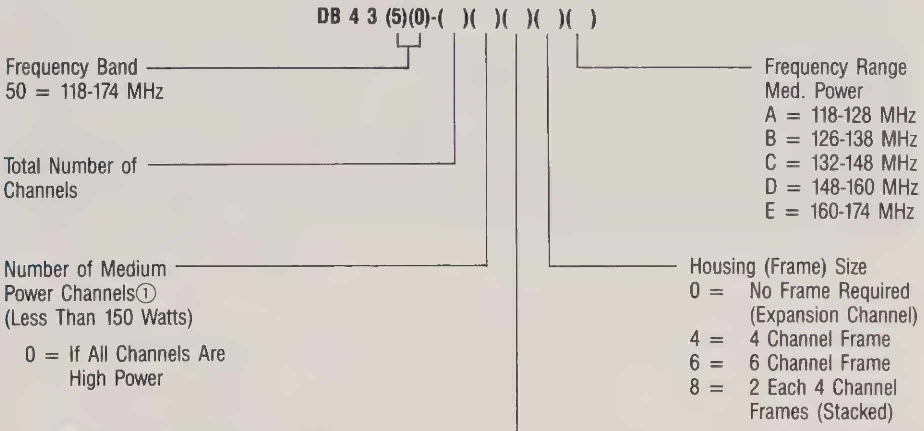
Ordering Information

Please specify exact frequency. Order DB4350-2 for 2 channels, DB4350-3 for three channels, etc., through DB4350-8 for 8 channels. See chart for details.

Ordering Information

Ordering or identifying a Decibel VHF high Q low loss combiner is straight forward with the 12 digit model nomenclature number. A digit or digits identifies the frequency range, number of channels, power input requirement and housing (frame) for the equipment.

Model Number Guide



DB 4 3 (5)(0)-( )( )( )( )( )

Frequency Band
50 = 118-174 MHz

Total Number of Channels

Number of Medium Power Channels① (Less Than 150 Watts)
0 = If All Channels Are High Power

Frequency Range Med. Power
A = 118-128 MHz
B = 126-138 MHz
C = 132-148 MHz
D = 148-160 MHz
E = 160-174 MHz

Housing (Frame) Size
0 = No Frame Required (Expansion Channel)
4 = 4 Channel Frame
6 = 6 Channel Frame
8 = 2 Each 4 Channel Frames (Stacked)

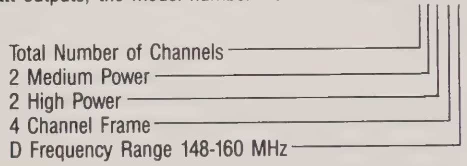
Number of High Power Channels② Greater Than 150 Watts Up To 350 Watts Max. Use "0" If All Channels Are Medium Power.

① Includes Dual Medium Power Isolator Per Channel

② Includes Three High Power Isolators Per Channel

DB4350-4 Combiner
DB4350-8 Combiner

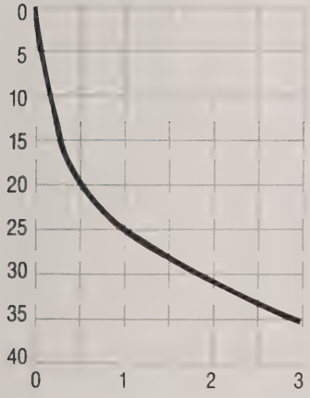
Example: If 4 channels are to be combined and 2 of the 4 transmitters are greater than 150 watt outputs, the model number would be DB4350-4224D



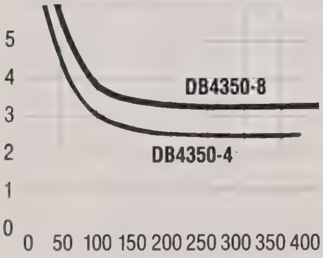
Total Number of Channels
2 Medium Power
2 High Power
4 Channel Frame
D Frequency Range 148-160 MHz

When ordering, identify by frequency and power levels all channels to be combined.

Transmitter Noise Rejection-dB vs. Frequency Separation-MHz



Insertion Loss-dB vs. Frequency Separation-MHz



Electrical Data	
Frequency Range — MHz	118-174
Isolation (minimum) — dB	
Tx to Tx	80
Antenna to Tx	75
Insertion loss (–4 and –8 channel models)	See curves
Attenuation: harmonics and intermod products (minimum) — dB	70
Temperature range — C°	–30 to +60
Maximum input VSWR (reference to 50 ohms)	1.25 to 1
Maximum power input *(each channel) — watts	150

*NOTE: Power to 350 watts available, consult factory for details.
DB4350-8 has 0.5 dB to 1.0 dB additional insertion loss, depending on frequency separation.

Mechanical Data	
Cabinet dimensions — in. (mm)*	
Height DB4350-2, -3, -4	43.5 (1,104.9)
DB4350-5, -6, -7, -8	83.5 (2,120.9)
Width	24 (609.6)
Depth	24 (609.6)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg) Model DB4350-4	157 (71.21)
Shipping weight — lbs. (kg) Model DB4350-4	285 (129.27)
Net weight — lbs. (kg) Model DB4350-8	314 (142.43)
Shipping weight — lbs. (kg) Model DB4350-8	570 (250.55)

*Six channel frame is 36″ (914.4 mm)×24″ (609.6 mm)×43.5″ (1104.9)

DB4360 LOW LOSS COMBINER 138-174 MHz

DB4360 Transmitter Combiner

The DB4360 is a low loss, high performance combiner for the VHF band. An 8″ (203.2 mm) cavity and a dual junction isolator are used for each channel.

The combiner provides minimum isolation from Tx to Tx of 80 dB, from antenna to Tx of 75 dB. Insertion loss depends on the separation between channels. For example, the loss is less than 3 dB at a channel spacing of 400 KHz for a 4-channel combiner. (See chart.)

Maximum input power is 150 watts per channel.

Design and Construction

The combiners are tuned and tested at the factory before shipment, but retuning in the field is possible with suitable test equipment.

Frequency stability over a wide temperature range is achieved by using a threaded Invar rod — with almost no expansion — to control the length of the center conductor in each cavity.

Each combiner is self-contained in a single package and can be mounted in a 19″ (482.6 mm) rack, or it can sit on the floor or on a shelf.

Ordering Information

Please specify exact operating frequencies for each channel. Order DB4360 and add −2, −3 etc., through −8 to signify the number of channels desired.

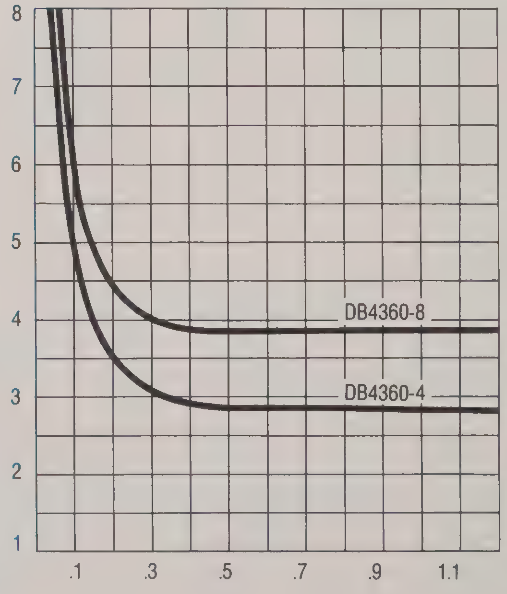
Order the optional DB70 Rack, 19″×6′ (.483 mm×1.83 m), and the combiners will be mounted and tuned, ready for installation.

Electrical Data	
Frequency Range — MHz	138-174
Isolation (minimum) — dB	
Tx to Tx	80
Antenna to Tx	75
Insertion loss DB4360-4, DB4360-8	See curves
Attenuation: harmonics and intermod productions (minimum) — dB	70
Temperature range — C°	−30 to +60
Maximum input VSWR (Ref. 50 ohms)	1.25 to 1
Maximum power input* (each channel) — watts	150

*NOTE: Power to 350 watts available, consult factory for details.

Mechanical Data	
Dimensions — in. (mm) DB4360	
Height	18.5 (469.9)
Width	19 (482.6)
Depth	25 (635)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	
DB4360-4	49 (22.23)
DB4360-8	98 (44.45)
Shipping weight — lbs. (kg)	
DB4360-4	82 (37.19)
DB4360-8	164 (74.39)

Insertion Loss-dB vs. Frequency-MHz



DB4369 LOW LOSS TRANSMITTER COMBINER 4 and 8 CHANNEL, 200-226 MHz

DECIBEL

DB4369-8 Tx Combiner

DB4369-4 Tx Combiner

Two models are offered to combine four or eight transmitters in the 200-226 MHz frequencies at close spacing.

DB4369-4 has four cavities and combines four 150-watt transmitters at a minimum frequency separation of 50 KHz.

DB4369-8 has eight cavities and combines eight 150-watt transmitters at a minimum frequency separation of 50 KHz.

The greater the frequency separation, the less insertion loss for each channel.

Design and Construction

Between each transmitter and a 5-way connector, there is a DB4002 High Q Cavity, a DB4616-2 Dual Junction Circulator with 60-watt and 30-watt terminations. All channels are brought together at a suitable N-way junction and matched to provide maximum energy transfer to the antenna.

The 4 and 8 channel combiners are field tunable and can be ordered for expansion to 4 or 8 channels at a later time. The added channels can be field tuned to the operating frequency. Because of the ferrite isolator's load, the unused channels do not have to be terminated into a dummy load.

See charts for low insertion loss and transmitter noise rejection.

The cabinet is included and has heavy duty roller wheel for easy installation and maintenance. Cabinets can be stacked, up to eight channels.

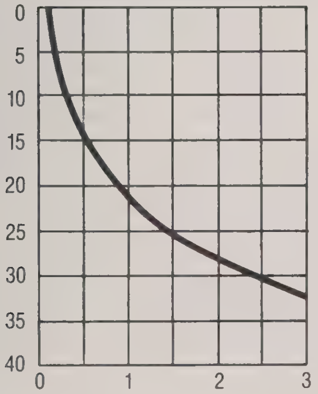
Accessories

Decibel's family of Sentry 8000 Remote Site Monitors is available to report status and alarm conditions of station equipment, transmission lines and antennas, conveniently and cost effectively.

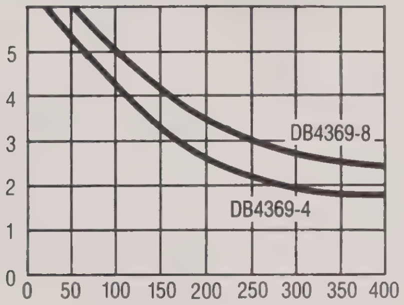
Ordering Information

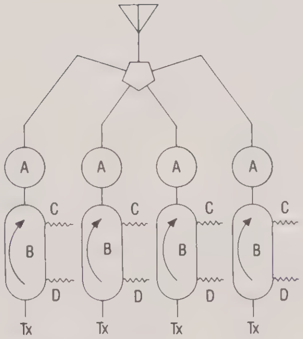
Please specify the frequency of each transmitter. Order DB4369-4 to combine 4 channels, DB4369-8 to combine 8 channels.

Transmitter Noise Rejection-dB vs. Frequency Separation-MHz



Insertion Loss-dB vs. Frequency Separation-MHz





DB4369 Components

Between each transmitter and the 5-way connector is (A) DB4002 High Q Cavity, (B) DB4616-2A Dual Junction Circulator, (C) 60 watt 50 Ohm Resistive Load, (D) 30 watt 50 Ohm Resistive Load.

Electrical Data

Frequency Range — MHz	200-226
Isolation (minimum) — dB	
Tx to Tx	75
Antenna to Tx	70
Insertion loss	See curves
Attenuation: harmonics and intermod products (minimum) — dB	80
Temperature range — C°	−30 to +60
Maximum input VSWR (referenced to 50 ohms)	1.25 to 1
Maximum power input* (each channel) — watts	150

*Power to 350 watts is available, consult factory for details.

NOTE: DB4369-8 will have 0.5 dB to 1.0 dB additional insertion loss, depending on the frequency separation.

Mechanical Data

	DB4369-4	DB4369-8
Cabinet dimensions — in. (mm)		
Height	43.5 (1,104.9)	83.5 (2,120.9)
Width	24 (609.6)	24 (609.6)
Depth	24 (609.6)	24 (609.6)
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	157 (71.21)	314 (142.43)
Shipping weight — lbs. (kg)	285 (129.27)	570 (258.55)

DB4365 MULTICHANNEL COMBINER 450-512 MHz

The DB4365 combines four or more transmitters as closely spaced as 150 KHz, with minimum insertion loss.

Field expandable, it uses a building block approach for system expansion up to 12 transmitters on a single antenna. Each channel handles 150 watts continuous input power.

Design and Construction

The DB4365 uses high Q quarter-wave cavities with half-inch (12.7 mm) low loss superflexible HELIAX® interconnecting and phasing cables. Each cavity is 5×7×12 inches (127×177.8×304.8 mm) and is made of copper. It is temperature compensated and used in a bandpass configuration with N-Female connectors. A dual junction isolator is mounted at each cavity input port.

The cavity-isolator combination provides maximum transmitter-to-transmitter isolation and assures a high degree of isolation to frequencies 5 MHz removed from each cavity's center frequency.

The basic building block is four cavities and four dual junction isolators with 60-watt and 30-watt loads interconnected on 19″ (482.6 mm) brackets. Two 4-cavity units can be combined for 8 channels, three 4-cavity units for 12 channels. All combiners mount in 19″ (482.6 mm) racks.

The combiners are factory tuned and shipped with performance data at the frequencies specified in each order. The combiners can be retuned in the field with appropriate equipment. The Serpentine™ cabling design permits field expansion with minimal additional loss.

Accessories

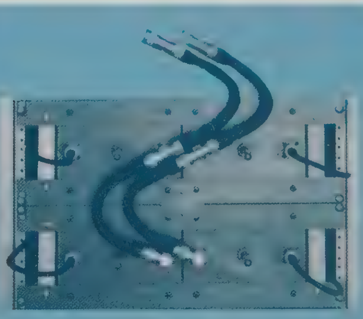
The DB4365 can be used in conjunction with power sensors and other monitoring equipment. Performance improvement accessories offered by Decibel include Z-matchers, transmit SHAPE FACTORED FILTERS® and multi-channel receiver multicouplers.

Decibel's family of Sentry 8000 monitors is available to report status and alarm conditions of station equipment, transmission lines and antennas, conveniently and cost effectively.

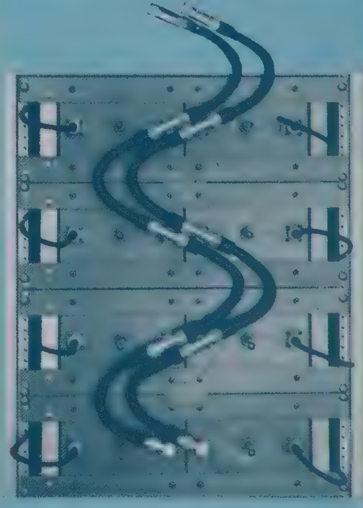
Ordering Information

Please specify exact frequencies for each channel. Order DB4365 and indicate 4-channel, 8-channel or 12-channel combiner. For rack mounted shipment, order the DB70 open rack, 6′×19″ (1.82×.482 m).

HELIAX is a registered trademark of Andrew Corporation.
SHAPE FACTORED FILTER is a trademark of Decibel Products, Inc.

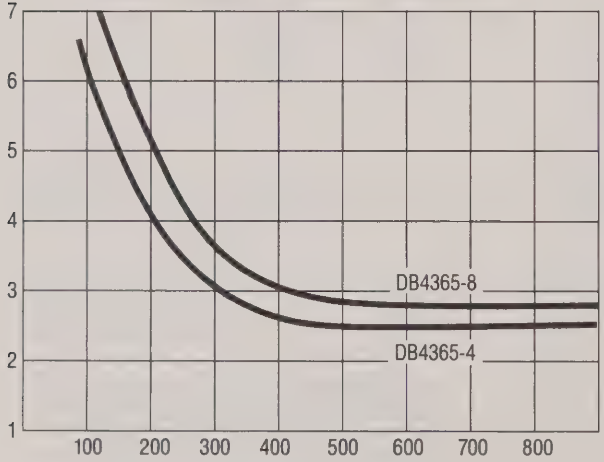


DB4365-4 Combiner

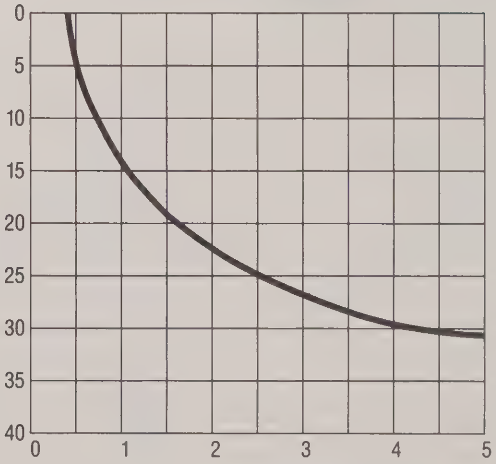


DB4365-8 Combiner

Insertion Loss-dB vs. Frequency Separation-KHz



Transmitter Noise Suppression-dB vs. Frequency Separation-MHz



Electrical Data	
Frequency Range — MHz	450-512
Isolation (minimum) — dB	
Tx to Tx	75
Antenna to Tx	70
Attenuation: harmonic and intermod products (min.) — dB	80
Temperature range — C°	−30 to +60
Maximum input VSWR (reference 50 ohms)	1.3 to 1
Maximum power input (each channel) — watts	150

Mechanical Data	4-Channel	8-Channel
Dimensions (D×W×H) — in. (mm)	12 (304.8)× 19 (482.6)× 12.25 (311.15)	12 (304.8)× 19 (482.6)× 24.5 (622.3)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack
Connector termination	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	43 (19.5)	90 (40.82)
Shipping weight — lbs. (kg)	54 (24.49)	125 (56.7)

DB4379 LOW LOSS TRANSMITTER COMBINER 2 to 8 CHANNELS, 406-512 MHz

Many models of the DB4379 are offered to combine two through eight transmitters in the 406-512 MHz frequencies at close spacing.

Minimum frequency separation is 50 KHz. However, the greater the frequency separation, the less the insertion loss.

Design and Construction

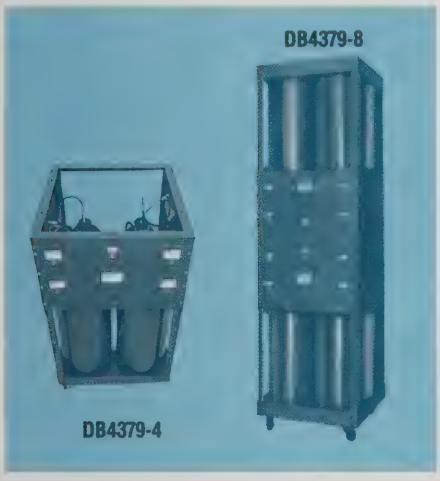
Between each transmitter and a 5-way or 6-way connector, there is an 11″ (279.4 mm) DB4002B High Q Cavity and a DB4600 Series Dual Junction Isolator. The input junction is terminated with a 30 watt load, the output junction with a 60 watt load.

All channels are brought together at a suitable N-way junction and matched to provide maximum energy transfer to the antenna.

The combiners are tuned at the factory, but, when expanded, new units can be tuned in the field. Because of the ferrite isolator's load, unused channels need no dummy load termination.

The cabinet is included and has heavy duty roller wheels for easy installation and maintenance. Cabinets can be stacked, up to eight channels.

Please specify exact frequency. Order DB4379-2 for 2 channels, DB4379-3 for three channels, etc., through DB4379-8 for 8 channels. See chart for details.



Ordering Information

Ordering or identifying a Decibel UHF high Q low loss combiner is straight forward with the 12 digit model nomenclature number. A digit or digits identifies the frequency range, number of channels, power input requirements and housing (frame) for the equipment.

Model Number Guide

DB 4 3 (7)(9)-( )( )( )( )( )

Frequency Band
79 = 406-512 MHz

Total Number of Channels

Number of Medium Power Channels (Less Than 150 Watts)

Use 0 = If All Channels Are High Power

Frequency Range, Medium Power
Use A = 406-450 MHz
B = 450-512 MHz

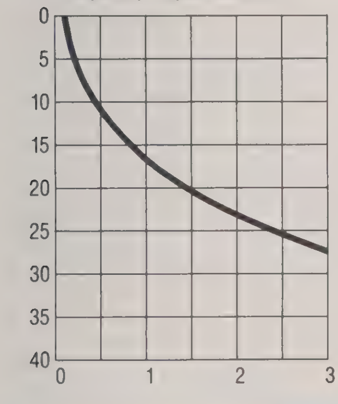
Housing (Frame) Size
0 = No Frame Required (Expansion Channel)
4 = 4 Channel Frame
6 = 6 Channel Frame
8 = 2 Each 4 Channel Frames (Stacked)

Number of High Power Channels ②, greater than 150 watts up to 350 watts max.

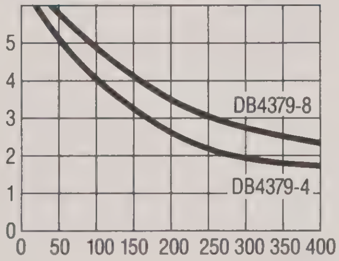
Use 0 = If all channels are Medium Power (150 watts or less)

① Includes Dual Medium Power Isolator Per Channel
② Includes Three High Power Isolators Per Channel

Transmitter Noise Rejection-dB vs. Frequency Separation-MHz



Insertion Loss-dB vs. Frequency Separation-MHz



Example: If 4 channels are to be combined, and 2 of the 4 transmitters power are greater than 150 watts output, the model number would be DB4379-4224

4 Total Channels
2 Medium Power
2 High Power
4 Frame

When ordering, identify by frequency and power levels all channels to be combined.

Electrical Data

Frequency Range — MHz	450-512
Isolation (minimum) — dB	
Tx to Tx	75
Antenna to Tx	65
Insertion loss (–4 and –8 channel models)	See curves
Attenuation: harmonics and intermod products (minimum) — dB	80
Temperature range — C°	–30 to +60
Maximum input VSWR (reference to 50 ohms)	1.25 to 1
Maximum power input *(each channel) — watts	150

*NOTE: Power to 350 watts available, consult factory for details.
DB4379-8 has 0.5 dB to 1.0 dB additional insertion loss, depending on frequency separation.

Mechanical Data

Cabinet dimensions — in. (mm)	
Height DB4379-2, -3, -4	43.5 (1,104.9)
DB4379-5, -6, -7, -8	83.5 (2.120.4)
Width	24 (609.6)
Depth	24 (609.6)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg) Model DB4379-4	157 (71.21)
Shipping weight — lbs. (kg) Model DB4379-4	285 (129.27)
Net weight — lbs. (kg) Model DB4379-8	314 (142.43)
Shipping weight — lbs. (kg) Model DB4379-8	570 (258.55)

DB4351/6 SERIES OF HYBRID TRANSMITTER COMBINERS, 118-174 MHz

DECIBEL

DB4351 Hybrid Tx Combiner

Eight models are offered, all with tunable hybrids designed to be tuned to the antenna system for optimum performance.

DB4351-2 combines two transmitter outputs with up to 125 watts per channel in the 118-148 or 148-174 MHz band. It consists of a hybrid and a 100-watt load, two ferrite isolators with external 30-watt 50-ohm loads, and two harmonic filters. Tunable isolators are used for optimum performance.

DB4352-2 is the same as DB4351 except that dual isolators are in each transmitter port for better Tx to Tx isolation.

DB4353-2 combines the outputs of two transmitters with up to 350 watts each, in the 148-174 MHz band. It consists of a hybrid and a 300-watt load, single broadband isolator with external 60-watt, 50-ohm load in each port, and a harmonic filter in each port.

DB4354-2 is identical to DB4353 except for two isolators in each transmitter port.

Coupling Panels

DB4355 hybrid coupling panel can expand two DB4351-2 or DB4352-2 combiners into a 4-channel unit. Three panels and four 2-channel combiners make up an 8-channel transmitter combiner. Each panel consists of a hybrid and a 100-watt 50-ohm load.

DB4356 hybrid coupling panel consists of a hybrid and a 300-watt 50-ohm load. Used with the DB4353-2 or DB4354-2 two-transmitter combiners, it can expand to an 8-channel 350-watt transmitter combiner.

All of these combiners comply with FCC regulations for spurious energy. The DB4352-2 and DB4354-2 combiners perform much better than FCC requirements and are recommended when intermodulation occurs on an adjacent transmitter channel or on a nearby receiver frequency. Also, they suppress Tx intermodulation resulting from nearby transmitters.

The combiners mount in standard 19″ (482.6 mm) open relay racks.

Ordering Information

Please specify the frequency of each channel. Order DB4351-2 or DB4352-2 for medium power, DB4353-2 or DB4354-2 for high power 148-174 MHz, and DB4355 medium power or DB4356 high power coupling panels for up to 8-channel combining. Four channel models have a −4 suffix. The 11607 18″ (38.1 mm) and 11608 36″ (76.2 mm) RG-142/U Interconnect Cables with N-Male connectors are optional.

CAN BE SHIPPED UPS.

Electrical Data

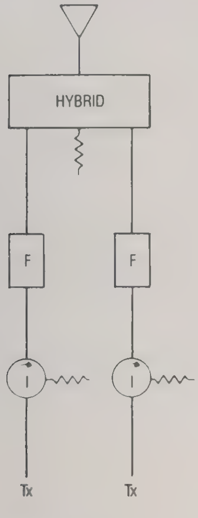
	DB4351-2	DB4351-4	DB4352-2	DB4352-4	DB4353-2
Frequency Ranges* — MHz	118-148, 148-174	118-174	118-148, 148-174	118-174	148-174
Isolation — dB					
Tx to Tx	70	70	100	100	70
Antenna to Tx	33	33	70	70	33
Insertion loss (maximum) — dB	4.2	7.2	4.7	7.7	4.2
Attenuation (minimum) — dB					
Intermod products	70	70	100	100	70
Second harmonic	65	65	65	65	65
Maximum power input (per channel) — watts	125	125	150	150	350
Input VSWR (maximum reference to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	4	4	4	4	10
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

*The field tuning range is approximately ±10 MHz about the center frequency in the 118-148 MHz band.

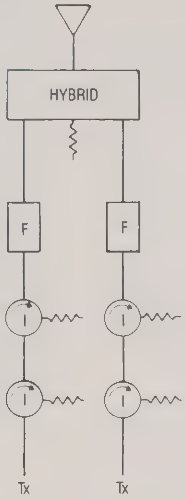
Mechanical Data

	DB4351-2	DB4351-4	DB4352-2	DB4352-4	DB4353-2
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	15 (6.8)	39.75 (18.03)	17.5 (7.94)	44.75 (20.30)	38.25 (17.35)
Shipping weight — lbs. (kg)	20.5 (9.3)	45 (20.41)	23 (10.43)	50 (22.68)	44 (19.96)

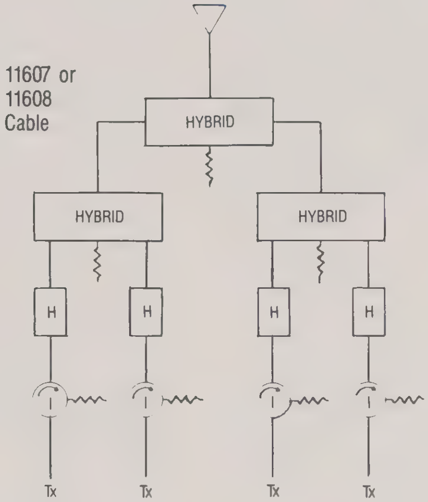
Transmitter Combiners



Two-transmitter combiner with hybrid, harmonic filters (F) and isolators (I) as supplied in DB4351-2 and DB4353-2.



Two-transmitter combiner with hybrid, harmonic filters (F) and isolators (I) as supplied in DB4352-2 and DB4354-2.



Four-transmitter combiner showing use of third hybrid and 11607 or 11608 interconnect cable to combine outputs of two dual Tx combiners.

Electrical Data

	DB4353-4	DB4354-2	DB4354-4	DB4355	DB4356
Frequency Ranges* — MHz	148-174	148-174	148-174	148-174	148-174
Isolation — dB					
Tx to Tx	70	100	100	40	40
Antenna to Tx	33	65	65	3.2	3.2
Insertion loss (maximum) — dB	7.2	4.7	7.7	3.2	3.2
Attenuation (minimum) — dB					
Intermod products	70	100	100	40	40
Second harmonic	65	65	65	N/A	N/A
Maximum power input (per channel) — watts	350	350	350	100	300
Input VSWR (maximum reference to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	10	10	10	10	10
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

*The field tuning range is approximately ±10 MHz about the center frequency in the 118-148 MHz band.

Mechanical Data

	DB4353-4	DB4354-2	DB4354-4	DB4355	DB4356
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 5.25 (133.35)× 4.5 (114.3)	19 (482.6)× 8.75 (222.25)× 7 (177.8)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	90.5 (41.05)	57.75 (26.19)	129.5 (58.74)	9.25 (4.2)	13.5 (6.12)
Shipping weight — lbs. (kg)	96 (43.54)	63.25 (28.69)	135 (61.22)	13.25 (6.01)	18.5 (8.39)

DB4381/6 SERIES OF HYBRID TRANSMITTER COMBINERS, 406-512 MHz

DECIBEL

Eight models are offered, all with tunable hybrids designed to be tuned to the antenna system for optimum performance.

DB4381-2 combines two transmitter outputs with up to 125 watts per channel in the 406-450 or 450-512 MHz bands. It consists of a hybrid and a 100 watt load, two ferrite isolators with external 30-watt 50-ohm loads, and two harmonic filters. Tunable isolators can be used for optimum performance.

DB4382-2 is the same as DB4381-2 except that two isolators are included in each Tx input for better Tx to Tx isolation.

DB4383-2 combines the outputs of two transmitters with up to 350 watts each, in the 406-450 or 450-512 MHz bands. It consists of a hybrid and a 300-watt load, two broadband isolators with external 60-watt 50-ohm loads, and two harmonic filters.

DB4384-2 is identical to DB4383-2 except that two isolators are used in each transmitter input.

Coupling Panels

DB4355 hybrid coupling panel can expand two DB4381-2 or DB4382-2 combiners into a 4-channel unit. Three panels and four 2-channel combiners make up an 8-channel transmitter combiner. Each panel consists of a hybrid and 100-watt 50-ohm load.

DB4386 hybrid coupling panel consists of a hybrid and 300-watt 50-ohm load. Used with DB4383-2 and DB4384-2 two-transmitter combiners, it can expand to an 8-channel 350-watt transmitter combiner.

All of these combiners comply with FCC regulations for spurious energy. The DB4382-2 and DB4384-2 combiners perform much better than FCC requirements and are recommended when intermodulation occurs on an adjacent transmitter channel or on a nearby receiver frequency. Also, they are recommended for congested sites because they suppress transmitter intermodulation resulting from nearby transmitters.

All combiners are designed to mount in standard 19″ (482.6 mm) open relay racks.

Accessories

Decibel's family of Sentry 8000 Remote Site Monitors is available to report status and alarm conditions of station equipment, transmission lines and antennas conveniently, cost effectively.

Ordering Information

Please specify the frequency of each channel. Order DB4381-2 or DB4382-2 for medium power, DB4383-2 or DB4384-2 for high power, and DB4385 or DB4386 coupling panels for up to 8-channel combining. Four channel models have a −4 suffix. The 11607 18″ (38.1 mm) and 11608 36″ (76.2 mm) RG-142/U Interconnect Cables with N-Male connectors are optional.

DB4381 Hybrid Tx Combiner

CAN BE SHIPPED UPS.

Electrical Data

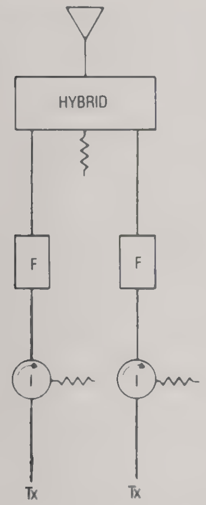
	DB4381-2	DB4381-4	DB4382-2	DB4382-4	DB4383-2
Frequency Ranges — MHz	406-512	406-512	406-512	406-512	406-512
Isolation — dB					
Tx to Tx	70	70	100	100	70
Antenna to Tx	33	33	70	70	33
Insertion loss (maximum) — dB	4.2	7.2	4.7	7.7	4.2
Attenuation (minimum) — dB					
Intermod products	70	70	100	100	70
Second harmonics	65	65	65	65	65
Maximum power input (per channel) — watts	125	125	150	150	350
Input VSWR (maximum referenced to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	4	4	4	4	10
Temperature range — C°	−30° to +60°	−30° to +60°	−30° to +60°	−30° to +60°	−30° to +60°

Mechanical Data

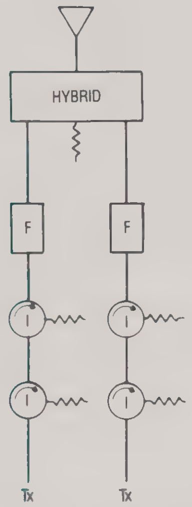
	DB4381-2	DB4381-4	DB4382-2	DB4382-4	DB4383-2
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	15 (6.8)	39.75 (18.29)	17.5 (7.94)	44.75 (20.59)	38.25 (17.35)
Shipping weight — lbs. (kg)	20.5 (9.3)	45 (20.41)	23 (10.43)	55 (22.68)	44 (19.96)

DB4381/6 SERIES OF HYBRID TRANSMITTER COMBINERS, CONTINUED

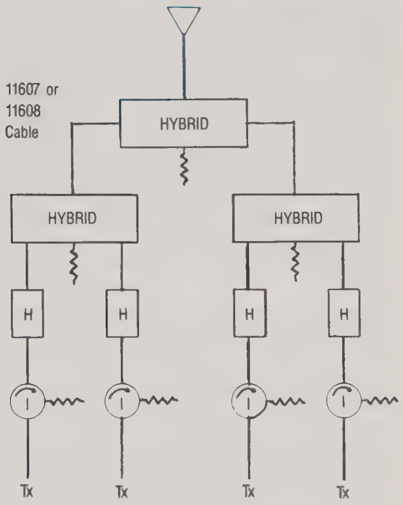
Transmitter Combiners



Two-transmitter combiner with hybrid, harmonic filters (F) and isolators (I) as supplied in DB4381-2 and DB4383-2.



Two-transmitter combiner with hybrid, harmonic filters (F) and isolators (I) as supplied in DB4382-2 and DB4384-2.



Four-transmitter combiner showing use of third hybrid and 11607 or 11608 interconnect cable to combine outputs of two dual transmitter combiners.

Electrical Data

	DB4383-4	DB4384-2	DB4384-4	DB4385	DB4386
Frequency Ranges — MHz	406-512	406-512	406-512	406-512	406-512
Isolation — dB					
Tx to Tx	70	100	100	40	40
Antenna to Tx	33	65	65	3.2	3.2
Insertion loss (maximum) — dB	7.2	4.7	7.7	3.2	3.2
Attenuation (minimum) — dB					
Intermod products	70	100	100	40	40
Second harmonic	65	65	65	N/A	N/A
Maximum power input (per channel) — watts	350	350	350	100	300
Input VSWR (maximum reference to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	10	10	10	10	10
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

Mechanical Data

	DB4383-4	DB4384-2	DB4384-4	DB4385	DB4386
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 5.25 (133.35)× 4.5 (114.3)	19 (482.6)× 8.75 (222.25)× 7 (177.8)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	90.5 (41.05)	57.75 (26.19)	129.5 (58.74)	9.25 (4.2)	13.5 (6.12)
Shipping weight — lbs. (kg)	96 (43.54)	63.25 (28.69)	135 (61.22)	13.25 (6.01)	18.5 (8.39)

ACCESSORIES FOR TRANSMITTER COMBINERS, 30-512 MHz

DECIBEL

DB4307 Hybrid Coupler

DB4304-B 300 Watt Load

DB4308 Hybrid Coupler

DB4328 Z-Matcher
DECIBEL
DB4328
Z-MATCHER

DB4303-A 100 Watt Load

DB4331 Harmonic Filter
DECIBEL
DB4331

DB4602 50 Watt Load

DB4601 25 Watt Load

Hybrid Couplers

DB4307 combines transmitters in the 118-148 or 148-174 MHz bands, DB4308 in the 406-420 or 450-512 MHz bands. An external resistive load capable of dissipating half the power of both transmitters must be connected to the load port. With a matched antenna load and a matched resistive load, the hybrid will provide over 40 dB isolation between the transmitters connected to the input ports.

The tunable L.C. network at the output (antenna) port allows the hybrid to be matched to a slightly mismatched antenna system with a VSWR of up to 1.5 to 1. If the VSWR changes and the hybrid is not retuned, isolation will deteriorate as shown on the curve.

Z-Matchers

Three models are offered, DB4328 for 30-50 MHz, DB4329 for 118-148 and 148-174 MHz and DB4330 for 406-512 MHz. They allow transmitters to operate at maximum efficiency by matching the source impedance (transmitter output impedance) to the load impedance (antenna, duplexer, isolator, etc.).

Harmonic Filters

DB4331 is a small, efficient, low pass harmonic filter for 118-148 and 148-174 MHz systems. DB4332 is a similar filter for 406-420 and 450-512 MHz. For proper intermodulation protection, most systems require this type of filter between the isolator and antenna (or hybrid) to reject second and third harmonic transmitter energy.

Terminations (Loads)

These absorption type coaxial load resistors provide the stable 50 ohm termination and extremely low VSWR required by hybrids and circulators/isolators. Four models are offered. The 25, 50, 100 and 300 watt loads are dry (air) dielectric units that can be mounted in any position.

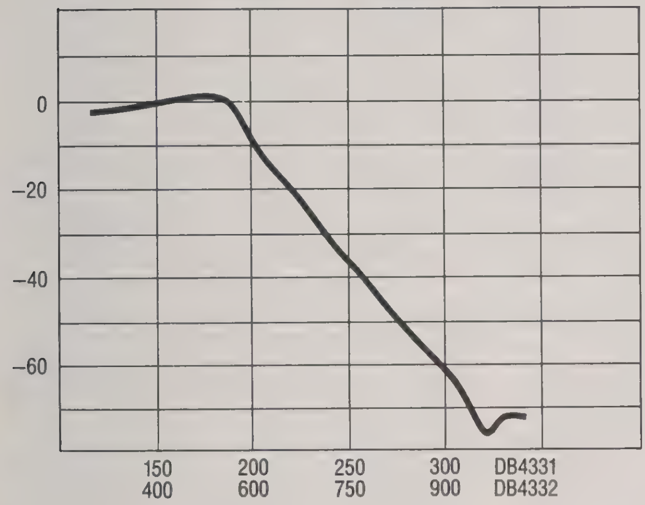
ACCESSORIES CONTINUED

Ordering Information

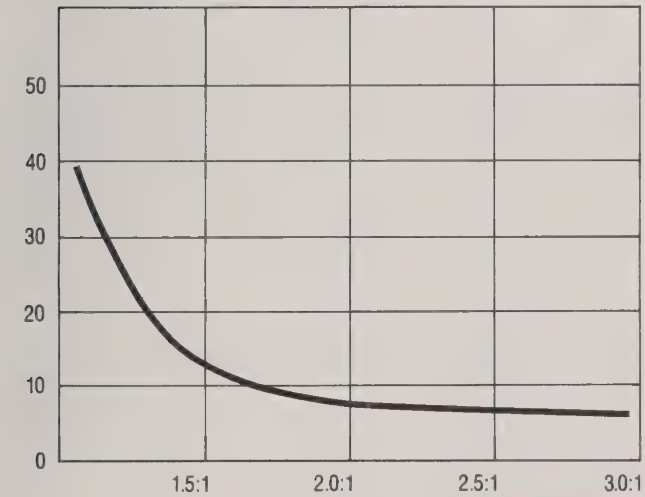
Please specify model number and frequency or range.

DB4307 Hybrid Coupler 118-148 or 148-174 MHz
DB4308 Hybrid Coupler 406-450 and 450-512 MHz
DB4328 Z-Matcher 30-50 MHz
DB4329 Z-Matcher 118-148 or 148-174 MHz
DB4330 Z-Matcher 406-512 MHz
DB4331 Harmonic Filter 118-148 or 148-174 MHz
DB4332 Harmonic Filter 406-512 MHz
DB4601 25 watt, 50 ohm load N-Male
DB4602 50 watt, 50 ohm load N-Male
DB4303-A 100 watt, 50 ohm load N-Male
DB4304-B 300 watt, 50 ohm load N-Female

Harmonic Filters
Attenuation-dB vs. Frequency-MHz



Hybrid Couplers
Isolation-dB vs. VSWR at Output (Antenna)



Z-Matchers

Frequency Ranges — MHz	
DB4328	30-50
DB4329	118-148, 148-174
DB4330	406-512
Maximum power input — watts	300
Connectors	N-Female
Dimensions (D×W×H) — in. (mm)	1.375 (34.93)×2.25 (57.15) ×1.125 (28.58)

Hybrid Couplers

Frequency Ranges — MHz	
DB4307	118-148, 148-174
DB4308	406-450, 450-512
Isolation (with matched 50 ohm antenna load) — dB	40
Insertion loss — dB	
Typical	3.2
Maximum	3.4
Maximum Tx to Tx frequency separation — MHz	4
Maximum power input (each channel) — watts	300
Temperature range — C°	–30 to +60
Connectors	N-Female
Dimensions (excluding connectors) — in. (mm)	
DB4307	12.125 (307.98)×3.25 (82.55)×1 (25.4)
DB4308	7.125 (180.98)×3.25 (82.55)×1 (25.4)

Harmonic Filters

Frequency Ranges (passband) — MHz	
DB4331	118-148, 148-174
DB4332	406-420, 450-512
Attenuation (at second and third harmonic) — dB	60
VSWR (maximum referenced to 50 ohms)	1.25 to 1
Maximum power input — watts	300
Temperature range — C°	–30 to +60
Connectors	Type N
Dimensions (excluding connectors) — in. (mm)	1.25 (31.75)× 1.375 (34.93)×2.25 (57.15)

Terminations (Loads)

	DB4601	DB4602	DB4303-A	DB4304-B
Maximum power input (at 40°C) — watts	25	50	100	300
Nominal impedance — ohms	50	50	50	50
VSWR (up to 1.0 GHz)	1.1 to 1	1.1 to 1	1.1 to 1	1.1 to 1
Connector	N-Male	N-Male	N-Male	N-Female
Dimensions — in. (mm)	1.25 (31.75) ×1 (25.4) dia.	1.125 (28.58) ×3 (76.2)	7.56 (192.02) ×3 (76.2) ×3 (76.2)	5 (127) ×8 (203.2) ×10 (254)

DB4610/4 DB4631/2 SERIES OF SINGLE STAGE FERRITE ISOLATORS, 118-174 and 406-512 MHz

DECIBEL

DB4600 Series Ferrite Isolators

Decibel's ferrite isolator is a circulator with a port terminated in a 30 watt load.

A circulator is a 3-port nonreciprocal device that consists of ferrite material, magnets and three short lengths of transmission line terminated at a common junction.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 1.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 30-35 dB or more.

Sub-band optimized isolators provide the best possible balance of insertion loss vs. isolation because of a fine tuning feature.

A 30 watt load, the DB4601, is used on the DB4600 series isolators to absorb the reflected transmitter power and dissipate the heat generated.

Applications

The ferrite isolator is the most effective solution to transmitter produced intermodulation — short of relocating transmitters — when the frequency separation between the desired and undesired signals is extremely close.

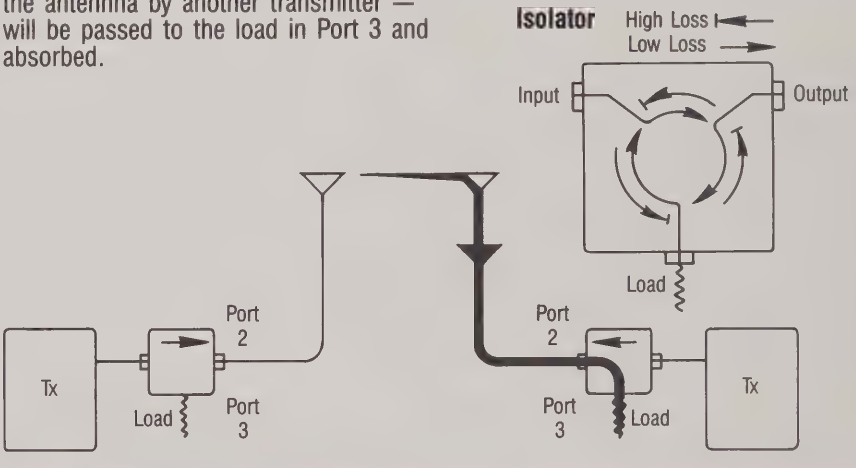
With its broad bandwidth, the isolator is equally suitable when frequency separation is 0 KHz to 4 MHz. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 30-35 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antennna by another transmitter — will be passed to the load in Port 3 and absorbed.

The load at Port 3 must match the impedance of the isolator exactly to prevent energy from being reflected from Port 3 to the input and output. In some instances, an isolator can produce second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

Please specify frequency or sub-band range. Order tunable isolators as follows: DB4610-1A for 118-128 MHz, DB4611-1A for 126-138, DB4612-1A for 132-148, DB4613-1A for 148-160, DB4614-1A for 160-174, DB4631-1A for 406-450, and DB4632-1A for 450-512 MHz. For isolators with other than 30-watt loads, see DB4700 Series of I.M. Panels.

CAN BE SHIPPED UPS.



Electrical Data

	DB4610-1A	DB4611-1A	DB4612-1A	DB4613-1A	DB4614-1A	DB4631-1A	DB4632-1A
Frequency Range — MHz	118-128	126-138	132-148	148-160	160-174	406-450	450-512
Bandwidth — MHz	4	4	4	4	4	6	6
Isolation — dB							
Center frequency	35	35	35	35	35	35	35
Minimum	30	30	30	30	30	30	30
Insertion loss — dB							
Center frequency	.3	.3	.3	.3	.3	.3	.3
Maximum	.4	.4	.4	.4	.4	.4	.4
VSWR (maximum) (referenced to 50 ohms)	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1
Power handling — watts							
Maximum input	150	150	150	150	150	150	150
Maximum reflected	30	30	30	30	30	30	30

Mechanical Data

	DB4610-1A	DB4611-1A	DB4612-1A	DB4613-1A	DB4614-1A	DB4631-1A	DB4632-1A
Dimensions — in. (mm)							
Including connectors and load terminations							
Height	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)
Width	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)
Length	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female
Temperature range — C°	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60

DB4610/4 DB4631/2 SERIES OF DUAL STAGE FERRITE ISOLATORS, 118-174 MHz and 406-512 MHz

DECIBEL

Decibel's dual ferrite isolator is a dual circulator with ports terminated in 30 and 60 watt loads.

A dual circulator is a 4-port nonreciprocal device that consists of ferrite material, magnets and six short lengths of transmission line terminated at a common junction.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 4.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 70-75 dB or more.

Sub-band optimized isolators provide the best balance of insertion loss vs. isolation because of a fine tuning feature.

Loads of 30 and 60 watts are used on the DB4600 series to absorb the reflected transmitter power and dissipate the heat generated.

Applications

The ferrite isolator is the most effective solution to transmitter produced intermodulation — short of relocating transmitters — when the frequency separation between the desired and undesired signals is extremely close.

With its broad bandwidth, the isolator is equally suitable when frequency separation is 0 KHz to 6 MHz. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 70-75 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antenna by another transmitter — will be passed to the load in Port 3 and absorbed.

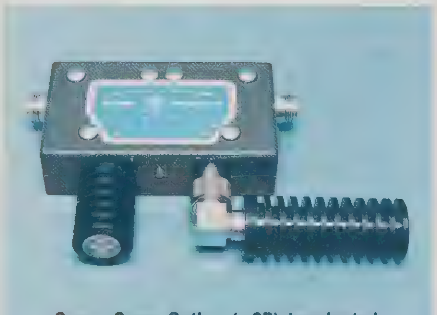
The load at Port 3 and 4 must match the impedance of the isolator exactly to prevent energy from being reflected from Port 3 and 4 to the input and output. Sometimes an isolator produces second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

Please specify frequency or sub-band range, and also if you want the space saver option -2B with a right angle adapter. Order dual tunable isolators as follows: DB4610-2A for 118-128 MHz, DB4611-2A for 126-138, DB4612-2A for 132-148, DB4613-2A for 148-160, DB4614-2A for 160-174, DB4631-2A for 406-450, and DB4632-2A for 450-512 MHz. For isolators with other than 30 and 60 watt loads, see DB4700 Series of I.M. Panels.

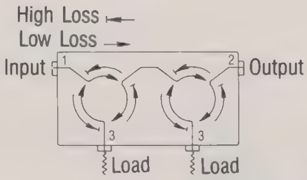
CAN BE SHIPPED UPS.

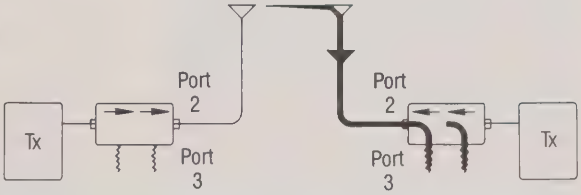
DB4600 Series Dual Ferrite Isolators



Space Saver Option (–2B) terminated with right angle adaptor.

Isolator





Electrical Data

	DB4610-2A	DB4611-2A	DB4612-2A	DB4613-2A	DB4614-2A	DB4631-2A	DB4632-2A
Frequency Range — MHz	118-128	126-138	132-148	148-160	160-174	406-450	450-512
Bandwidth — MHz	6	6	6	6	6	8	8
Isolation loss — dB							
Center frequency	75	75	75	75	75	75	75
Minimum	70	70	70	70	70	70	70
Insertion loss — dB							
Center frequency	.5	.5	.5	.5	.5	.4	.4
Maximum	.6	.6	.6	.6	.6	.5	.5
VSWR (maximum) (referenced to 50 ohms)	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1
Power handling — watts							
Maximum input	150	150	150	150	150	150	150
Maximum reflected	60	60	60	60	60	60	60

Mechanical Data

	DB4610-2A	DB4611-2A	DB4612-2A	DB4613-2A	DB4614-2A	DB4631-2A	DB4632-2A
Dimensions* — in. (mm)							
Including connectors and load terminations							
Height	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)
Width	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)
Length	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female
Temperature range — C°	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60	–30 to +60

*NOTE: (–2B) Space saver is 7.5" (177.8 mm) W, by 4.25" (107.95 mm) L, by 1.3125" (33.27 mm) H.

DB4315 DB4325 SERIES OF HIGH POWER FERRITE CIRCULATORS, 140-174 and 406-512 MHz

DECIBEL

Decibel's DB4300 High Power ferrite circulators are 3-port nonreciprocal devices that consist of ferrite material, magnets and three short lengths of transmission line terminated at a common junction. When circulators have a load attached, they become isolators.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 1.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 25-30 dB or more.

Isolator Application

In VHF and UHF applications the circulator is almost always used as an isolator, in which Port 3 is terminated with a 50 ohm load resistor.

Unless the transmitter can be moved, the isolator is the best solution to transmitter produced intermodulation when the frequency separation is extremely close between the desired and undesired signals.

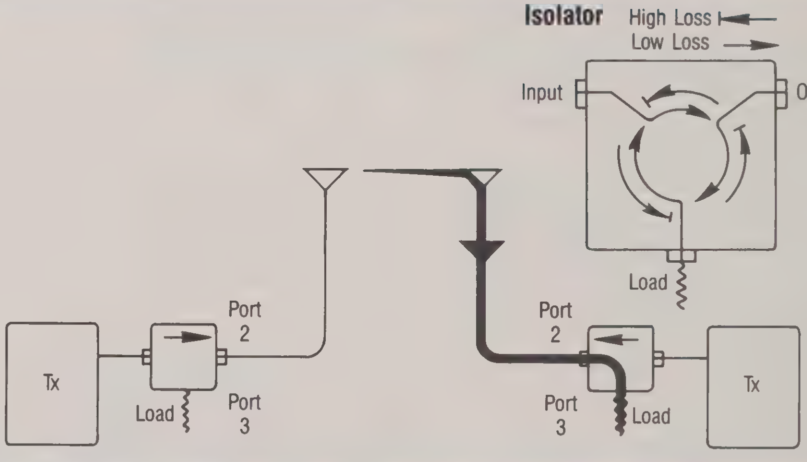
With its broad bandwidth, the isolator is equally suitable when frequency separation is within its rated bandwidth. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 25-30 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antennna by another transmitter — will be passed to the load in Port 3 and absorbed.

The load at Port 3 must match the impedance of the isolator exactly. In some instances, an isolator can produce second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

Please specify frequency or range. Order DB4315-B1 for 140-150 MHz, DB4315-B2 for 150-160 MHz, DB4315-B3 for 160-174 MHz, DB4325-A for 406-450 MHz and DB4325-B for 450-512 MHz. For 60 to 300 watt loads and low pass harmonic filters, see Transmitter Combiner Accessories.

DB4315 High Power Ferrite Circulator



Specifications

	DB4315	DB4325
Frequency Ranges* — MHz	B1 = 140-150, B2 = 150-160, B3 = 160-174	A = 406-450, B = 450-512
Bandwidth — MHz	14	65
Isolation loss — dB		
Center frequency	28	25
Minimum	25	20
Insertion loss — dB		
Center frequency	.4	0.3
Maximum — at band edges.	.6	0.5
VSWR (maximum) (referenced to 50 ohms)	1.25 to 1	1.25 to 1
Power handling — watts		
Maximum input	350	350
Maximum reflected	**	**
Temperature range — C°	−30 to +60	−30 to +60
Connectors	N-Female	N-Female
Dimensions (excluding connectors) — in. (mm)	6 (152.4)×5 (127)×1.875 (47.63)	4.125 (104.78)×4.125 (104.78)×1 (25.4)

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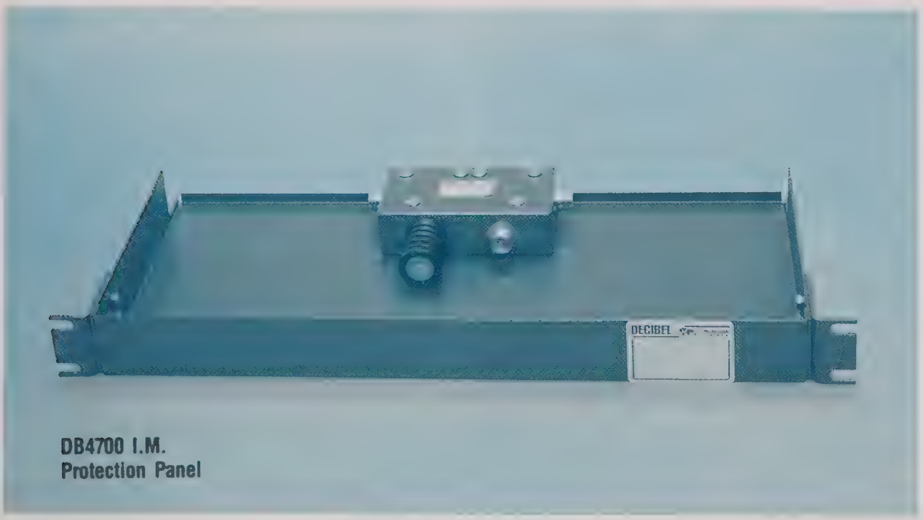
*The tunable units have a tuning range of approximately ±10 MHz in the 118-148 MHz band.

**To prevent damage to the circulator, select a 50 ohm load having a wattage rating that will absorb the maximum reflected power expected from the subsequent transmitter-antenna system.

DB4710/4 DB4731/2 SERIES OF FERRITE I.M. PROTECTION PANELS, 118-174 and 406-512 MHz

DECIBEL



DB4700 I.M. Protection Panel

These low profile I.M. (intermodulation) protection panels consist of a single or dual sub-band optimized isolator in the VHF and UHF frequency bands, an optional DB4300 Series Harmonic Filter and 30, 60 or 100 watt terminations at output stages.

Design and Construction

Single isolators feature pass losses of 0.4 dB over their rated bandwidth and 30 dB minimum isolation on resonance.

Dual isolators feature pass losses of 0.5 dB over their rated bandwidth and 70 dB minimum isolation on resonance. When the harmonic filter is used, it adds 0.2 dB to the total pass loss. It has 55 dB minimum rejection at the second harmonic of the operating frequency.

The low profile panel uses one vertical rack space of 1.75″ (44.45 mm). It is 8″ (203.2 mm) deep with traversable mounting holes in 2″ (50.8 mm) increments from front to back, which allows alignment with other equipment in the rack. High power panels are 8.75″×19″ (222.3 × 482.6 mm) and, with tray, 12.5″ (317.5 mm) deep.

DB4601 30-watt, DB4602 60-watt, or DB4303-F 100 watt loads are used in 150 watts or less panels. DB4303 100-watt and DB4304-B 350-watt loads are used in 350-watt panels. Loads absorb the reflected transmitter power and dissipate the heat generated.

Ordering Information

Ordering or identifying a Decibel Products' intermodulation protection panel is straight forward with the 10 digit model nomenclature number. A digit or digits within the model nomenclature identifies the frequency range, number of isolators, with or without harmonic filter and load termination required for maximum power reflected.

Model Number Guide

DB47 ( )( )( )-( )( )( )

Frequency Band

Use 10 For 118-128 MHz
11 For 128-138 MHz
12 For 136-148 MHz
13 For 148-160 MHz
14 For 160-174 MHz

Use 31 For 406-450 MHz
32 For 450-512 MHz

Add "H" For High Power Panel

For High Power Panel and Tray Add "HT"

For Decibel's VHF High Power (350 Watts Max.) Panel, Order DB4713 H OR HT.

For Decibel's UHF High Power (350 Watts Max.) Panel, Order DB4732 H OR HT.

Total Number of Isolators

Use 1 For Single Junction Isolator
2 For Dual Junction Isolator

Harmonic Filter

Use 0 = For (None Required)
1 = For (With Harmonic Filter)

(Reflected Power) Load Termination

Use 0 For (None Required)
1 For 30 Watt Load
2 For 60 Watt Load
3 For 100 Watt Load
4 For 300 Watt Load

Example: For ordering an I.M. Panel for 154.5 MHz with dual junction isolator when a harmonic filter is not required and the isolator is to be terminated with a 60 watt load — the product number to be ordered would be, 1 each DB4714-202.

160-174 Band

Dual Junction Isolator

Harmonic Filter
0 = (None Required)

60 Watt Load

DB8100, DB8200 DB8300 MODULAR RECEIVER MULTICOUPLER 4 to 32 CHANNELS, 30-512 MHz

DECIBEL

Modular Receiver Multicoupler

From 4 to 32 receivers can be combined to a single antenna by this modular multicoupler, which features plug-in power supplies and bipolar, low noise RF amplifiers on low profile chasses.

The multicoupler can be ordered as an expandable or nonexpandable unit. Channel capacity depends on the arrangement within the multicoupler of 4 or 8 power splitters, whose attenuation is offset by the RF amplifier.

The choice of preselector filter determines the bandpass response. This can be an internal, 2-stage helical resonator giving a wide passband or an external passband SHAPE FACTORED FILTER®.

Configurations

Nonexpandable 4 or 8 channel configurations use a low gain amplifier and a single 4-way or 8-way power splitter.

Expandable 4-channel configurations can combine up to 16 channels, four at a time. A medium gain amplifier is connected to an internal 4-way power splitter, which is connected to from one to four 4-way power splitters mounted on the back panel.

Expandable 8-channel configuration can combine up to 32 receivers, eight at a time. A high power amplifier is connected to an internal 4-way power splitter, which connects to from one to four 8-way power splitters mounted on the back panel. This arrangement guarantees the same multicoupler performance to each receiver in this and the 4-channel expandable configuration.

Mechanical Data

Dimensions — in. (mm)	
Height	3.5 (88.9)
Width	19 (482.6)
Depth	12 (304.8)
Connector terminations	
Input	N-Female
Output	BNC-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	10 (4.54)
Shipping weight — lbs. (kg)	12 (5.44)

Note: –W Suffix indicates latest amplifier, enclosure and power divider designs used in product.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

Electrical Data

	DB8100 Series	DB8200 Series	DB8300 Series
Frequency Range — MHz	30-88	148-174	406-512
Noise figure (typical) — dB			
4 Channel (non-expandable)	4.5	5.0	5.0
8 Channel (non-expandable)	4.5	5.0	5.0
4-16 Channel expandable	4.5	5.0	5.0③
8-32 Channel expandable	4.5	5.0	3.0
System gain (typical) — dB			
4 Channel (non-expandable)	+2⑤	+2	+2
8 Channel (non-expandable)	+3⑤	+3	+3
4-16 Channel expandable	+3⑤	+2⑤	+0③
8-32 Channel expandable	+1⑤	+0⑤⑥	+3⑤
Rx/Rx isolation — dB	>20	>20	25
Helical preselector (l dB bandwidth)	600 KHz	3 MHz	7 MHz
Receiver multicoupler absolute I.M. suppression			
with two -35 dBm input signals	>–120 dBm	>120 dBm	>120 dBm
with two -7 dBm input signals	—	—	—
(Typical amplifier 3rd order intercept point is 34 dBm)			
Input/Output VSWR		1.5 to 1 (max.)	1.5 to 1 (max.)
1 dBm Compression Point (minimum) — dBm			
4 Channel (non-expandable)	+17⑤	+17	+17
8 Channel (non-expandable)	+17⑤	+17	+17
4-16 Channel expandable	—	—	+17③
8-32 Channel expandable	+20⑤	+20⑤	+18③
Input connector	N-Female	N-Female	N-Female
Output connector	BNC Female	BNC Female	BNC Female
Power (line cord) — AC	115/220 VAC ± 10%	115/220 VAC ± 10%	115/220 VAC ± 10%
— DC	12 V	12 V	12 V

DB8100, DB8200 DB8300 MODULAR RECEIVER MULTICOUPLER CONTINUED

DECIBEL

Ordering Information

Ordering or identifying a Decibel Product's receiver multicoupler is straight forward with the 7 digit model-nomenclature number. A digit or digits within the number identifies the frequency range, number of channels (receiver output ports), power input requirements (i.e 115 VAC, 11-15 VDC, 220 VAC), helical preselector option, and receiver multicoupler configuration.

DB 8( )( )( )-( )( )( )

Frequency Range - MHz
1. 30-88
2. 148-174
3. 406-420
   450-482
   482-512

Required Channels
04 - 4 Channels
08 - 8 Channels
12 - 12 Channels
16 - 16 Channels
24 - 24 Channels
32 - 32 Channels

Receiver Multicoupler Configuration
0-4 Channel non-expandable only
  8 Channel non-expandable only
1-4 to 16 Channel expandable in
  4 channel steps
2-8 to 32 Channel expandable
  in 8 channel steps
3-High performance amplifier option
  406-512 MHz only
4-Low noise preamp (non-congested sites)

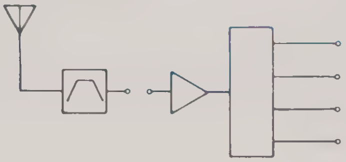
Filter Option
0 - None
1 - Preselector (Helical)
Provides attenuation of out of band signals and DC isolation between the multicoupler amplifier and antenna.

Power Supply
1 - 115 VAC Supply
2 - Delete 115 VAC Input
    Power Supply. Add
    11-15 VDC Input Option.
3 - 220 VAC Supply

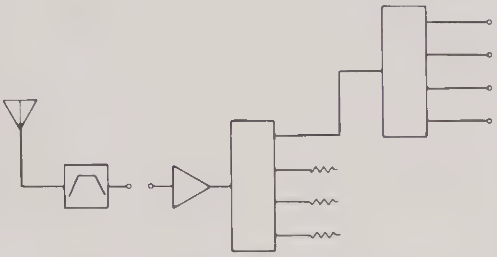
Example: DB8212-111 This model number would indicate a 12 channel, 148-174 MHz receiver multicoupler with 115 VAC power input requirement and helical preselector.

Note: –W Suffix indicates latest amplifier, enclosure and power divider designs used in product.

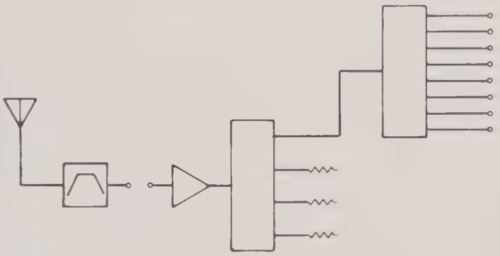
Receiver Multicoupler Configuration Block Diagrams



4 Channel Non-Expandable



4 Channel Expandable in 4 Channel Steps Up to 16



8 Channel Expandable in 8 Channel Steps Up to 32

Accessories

Model	Description	Model	Description
DB8900	Chassis Only w/ 115 VAC Power Cord	DB8951	Power Supply (200 VAC to 10 VDC)
DB8918	4-Way 30-512 MHz Power Splitter	DB8952	Power Supply (115 VAC to 15 VDC)
DB8919	8-Way 30-512 MHz Power Splitter	DB8953	Power Supply (220 VAC to 15 VDC)
DB8920	4-Way 800-930 MHz Power Splitter	DB8954	Power Supply (12-15 VDC to 10 VDC) Regulator
DB8931	Helical Preselector VHF	DB8955	Power Supply (12-15 VDC) Input Polarity and High Voltage Protection
DB8932	Helical Preselector UHF	DB8956	Power Supply (115 VAC to 24 VDC)
DB8942	400-512 MHz Amplifier (Low Gain)	DB8922	Power Splitter BNC 50 ohm loads
DB8944	30-200 MHz Amplifier (Medium Gain) 16 dB	DB8923-8	8 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8945	148-930 MHz Amplifier (High Gain) 23 dB	DB8923-12	12 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8946	200-400 MHz Amplifier (Medium Gain) 17 dB	DB8923-16	16 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8950	Power Supply (115 VAC to 10 VDC)	DB8923-24	24 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel

② Not available in this band as a non-expandable model.

③ The 406-512 MHz, 4 to 16 channel models are available with a high performance amplifier providing a 3.0 dB noise figure and 6 dB multicoupler gain. Amplifier third order intercept point is 34 dBm.

④ Specify operating frequency when ordering receiver mutlicoupler.

⑤ Models using 15 VDC amplifiers will have some degradation to specifications when operated with the 11-15 VDC input option.

⑥ The 148 to 174 MHz, 8 to 32 channel models are available with a higher gain amplifier providing +9 dB system gain.

DB8400, DB8600 DB8700 MODULAR RECEIVER MULTICOUPLER 4 to 16 CHANNELS, 118-136, 200-226 and 225-400 MHz

DECIBEL

DB8400, DB8600 and DB8700
Modular Receiver Multicoupler

From 4 to 16 receivers can be combined to a single antenna by this modular multicoupler, which features plug-in power supplies and bipolar, low noise RF amplifiers on low profile chasses.

The multicoupler can be ordered as an expandable or non-expandable unit. Channel capacity depends on the arrangement within the multicoupler of 4 or 8 power splitters, whose attenuation is offset by the RF amplifier.

Interference Protection

This is best provided by the use of a SHAPE FACTORED FILTER® preselector. The selectivity provided by these filters prevents intermodulation generation within the amplifier when overdriven by two signals appearing at the multicoupler input at levels exceeding –20 dBm. The DC ground provided by either filter protects the RF amplifier from possible lightning or static discharge damage.

Configurations

The nonexpandable 8 channel configuration uses a medium gain amplifier and a single 8-way power splitter.

Expandable 4-channel configurations can combine up to 16 channels, four at a time. A medium gain amplifier is connected to an internal 4-way power splitter, which is connected to from one to four 4-way power splitters mounted on the back panel.

See Next Page for Ordering Information

Mechanical Data

Dimensions — in. (mm)	
Height	3.5 (88.9)
Width	19 (482.6)
Depth	12 (304.8)
Connector terminations	
Input	N-Female
Output	BNC-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	10 (4.54)
Shipping weight — lbs. (kg)	12 (5.44)

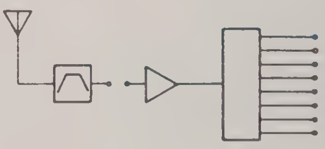
Note: –W Suffix indicates latest amplifier, enclosure and power divider designs used in product.

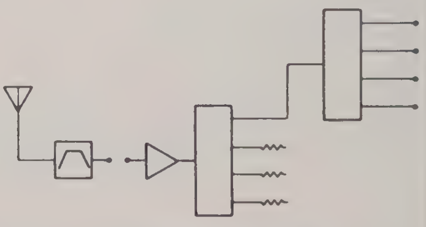
SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

Electrical Data

	DB8400 Series-4	DB8600 Series-4	DB8700 Series-4
Frequency Range — MHz	118-136①	225-400①	200-226①
Noise figure (typical) — dB			
8 Channel (non-expandable)	5.5	8.5	5.0
4-16 Channel expandable	5.5	8.5	5.0
System gain (typical) — dB			
8 Channel (non-expandable)	6	6	7
4-16 Channel expandable	3	3	4
Rx/Rx isolation — dB	>20	>20	>20
Helical preselector (I dB bandwidth)	DB8934	DB8936	5 MHz
Receiver multicoupler absolute I.M. suppression			
with two -35 dBm input signals	>120 dBm	>120 dBm	>139
with two -7 dBm input signals	72 dB down	72 dB down	–55
Input/Output VSWR	1.7 to 1	2.0 to 1	1.5 to 1
1 dBm Compression Point (minimum) — dBm			
8 Channel (non-expandable)	+29.5	29	+16
4-16 Channel expandable	+29.5	—	+16
Input connector	N-Female	N-Female	N-Female
Output connector	BNC Female	BNC Female	BNC Female
Power (line cord) — AC	115/220 VAC ± 10%	115/220 VAC ± 10%	115/220 VAC ± 10%
— DC	N/A	N/A	N/A

Receiver Multicoupler Configuration Block Diagrams


8 Channel Non-Expandable


4 Channel Non-Expandable
in 4 Channel Steps Up to 16

DB8400, DB8600 DB8700 MODULAR RECEIVER MULTICOUPLER (CONTINUED)

DECIBEL

Ordering Information

Ordering or identifying a Decibel Product's receiver multicoupler is straight forward with the 7 digit model-nomenclature number. A digit or digits within the number identifies the frequency range, number of channels (receiver output ports), power input requirements (i.e 115 VAC, 24 VDC, 220 VAC), and receiver multicoupler configuration.

DB 8( )( )( )-( )( )( )

Frequency Range - MHz
4. 118-136 (FAA)
6. 225-400 (FAA)
7. 200-226

Required Channels
04 - 4 Channels
08 - 8 Channels
12 - 12 Channels
16 - 16 Channels

Receiver Multicoupler Configuration
0-8 Channel non-expandable only
1-4 to 16 Channel expandable in 4 channel steps
2-N/A
3-N/A
4-Low noise preamp (non-congested sites)

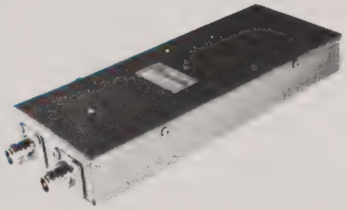
Filter Option
0 - None
1 - N/A
2 - Delete 115 VAC Input Power Supply. Add 11-15 VDC Input Option (DB8700).②

Power Supply
1 - 115 VAC Supply
2 - N/A
3 - 220 VAC Supply
4 - Delete 115 VAC Input Power Supply. Add 24 VDC Input Option DB8400, DB8600

Note: —W Suffix indicates when latest amplifier, enclosure and power divider designs are used in a product.

Recommended
SHAPE FACTORED FILTERS
118-400 MHz
(Order Separately)

118-136 MHz - DB8934
225-400 MHz - DB8936



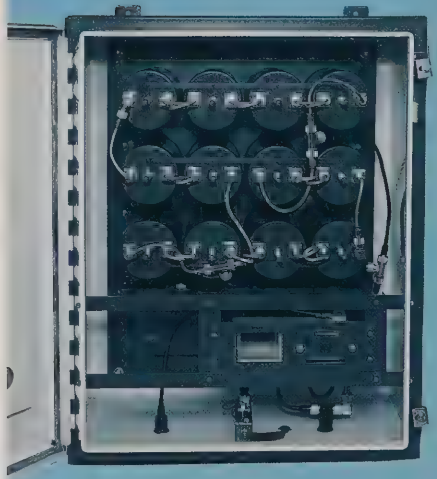
Accessories

Model	Description	Model	Description
DB8900	Chassis Only w/ 115 VAC Power Cord	DB8955	Power Supply (12-15 VDC) Input Polarity and High Voltage Protection
DB8918	4-Way 30-512 MHz Power Splitter	DB8956	Power Supply (115 VAC to 24 VDC)
DB8919	8-Way 30-512 MHz Power Splitter	DB8922	Power Splitter BNC 50 ohm loads
DB8944	30-200 MHz Amplifier (Medium Gain) 16 dB	DB8923-8	8 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8946	200-400 MHz Amplifier (Medium Gain) 17 dB	DB8923-12	12 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8952	Power Supply (115 VAC to 15 VDC)	DB8923-16	16 Channel - 19″ (482.6 mm) Rackmount BNC to N-Female Connector Cable Kit w/Panel
DB8953	Power Supply (220 VAC to 15 VDC)		

①Specify operating frequency when ordering receiver multicoupler.
②Models using 15 VDC amplifiers will have some degradation to specifications when operated with the 11-15 VDC input option.

DB8982W TOWER TOP RECEIVER AMPLIFIER
DB8983W 456-470 MHz (WITH 806-821 MHz)

DECIBEL



Tower Top Amplifier

Rack Mount Power Supply

Decibel's tower top amplifiers improve the sensitivity of base station receivers and extend the "talk back" range for low powered transmitters operating in the 456-470 and 806-821 MHz bands.

High gain, low noise amplifiers placed at the antenna terminal overcome the usual transmission line loss that adds to receiver noise and degrades receiver sensitivity.

Design and Construction

DB8982W provides 20 dB gain at the antenna terminals in the 456-460 and 466-470 MHz frequencies. The high gain, low noise amplifier is preceded by two parallel UHF DB4176W SHAPE FACTORED FILTERS®. Each filter has an essentially flat passband of 4 MHz with high rejection of signals as close as 1 MHz to the band edge.

Each filter, which can be tuned throughout the band, consists of six high Q coaxial cavities optionally coupled for a uniform passband with sharp rejection.

DC power is supplied through the transmission line by the use of a bias tee arrangement. A relay within the unit permits switching the amplifier in or out of the circuit, if required.

DB8983W is similar to the DB8982W except that, in addition to the 456-470 MHz bands, it handles the 806-821 MHz bands via a DB4192 preselector.

All amplifiers are factory tuned and shipped in weatherproof enclosures. The power supply is mounted on a 3.5" (88.9 mm) chassis for 19" (482.6 mm) rack mounting.

Lightning Protection

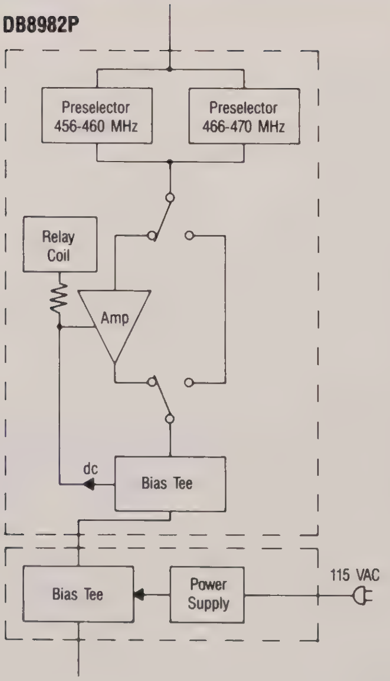
Several levels of protection have been incorporated. At antenna coax entry, a shorted quarter-wave stub brings the center conductor and the outer conductor of the coax to the same potential. The center conductor of the preselector filter is also tied to its outer conductor. This insures that any high currents or high voltage differentials at the input will be minimized. To protect the output, gas discharge tubes and high-current Zener diodes are used in the bias tee circuitry.

Ordering Information

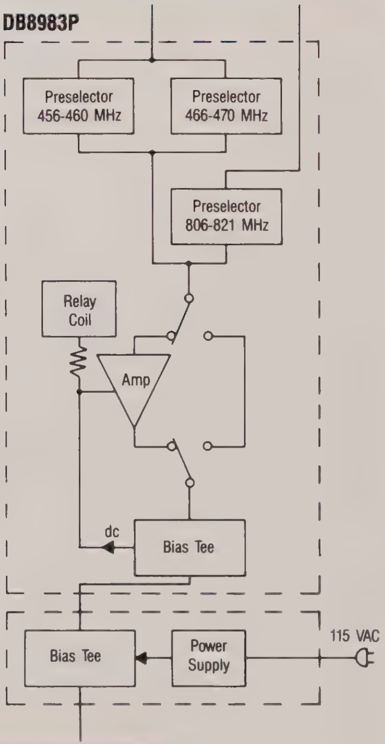
Please specify frequency. Order DB8982W for 456-460 and 466-470 MHz, DB8983W for 456-460 and 466-470 MHz plus 806-821 MHz.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

DB8982P



DB8983P

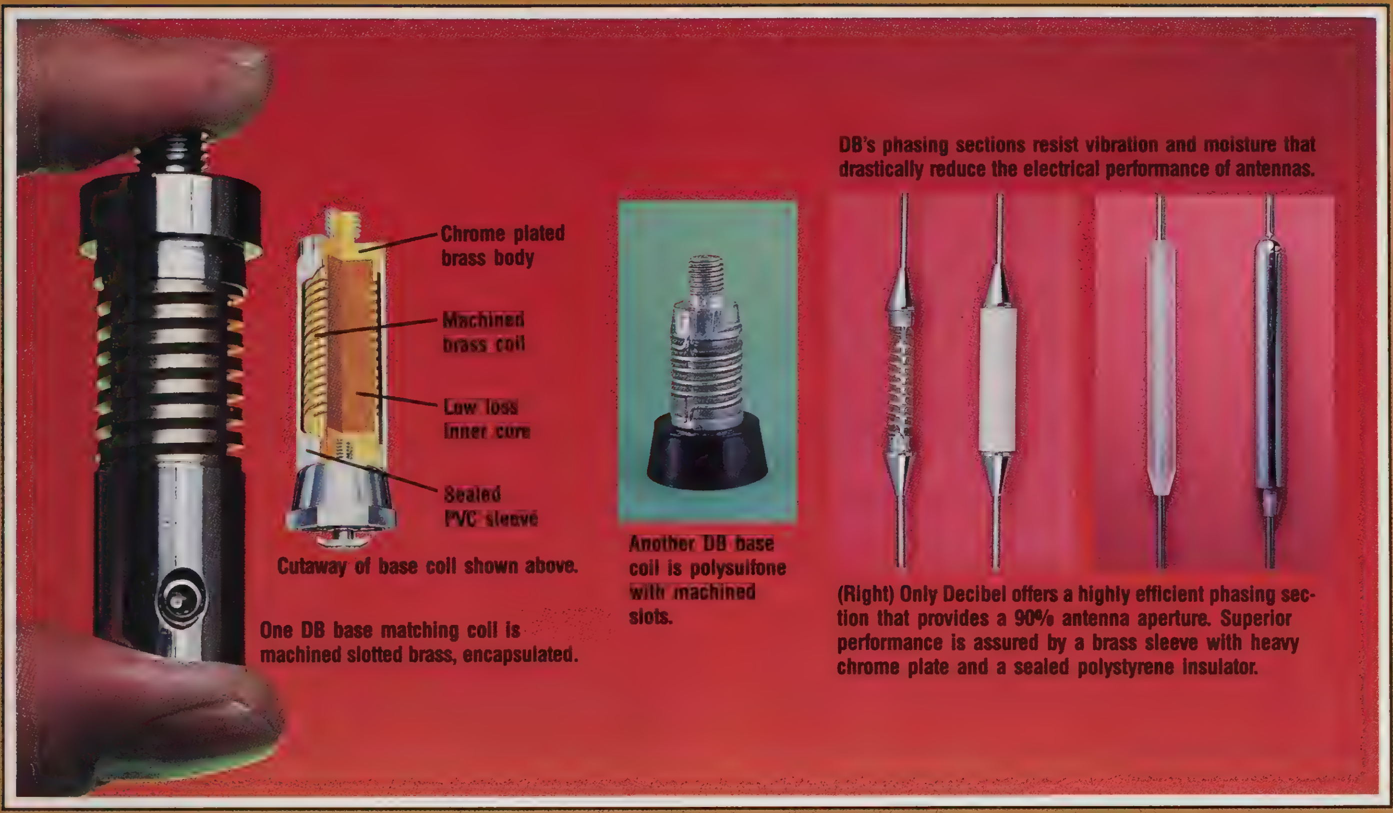


Electrical Data

	DB8982W	DB8983W
Frequency Ranges — MHz	456-460, 466-470	456-460, 466-470, 806-821
Gain (minimum) — dBm	20	20
Noise figure — dB	3.5	3.5
3rd Order intercept point — dBm	+35	+35
Temperature range — C°	−40 to +70	−40 to +70
Power — VAC	115	115

Mechanical Data

Dimensions — in. (mm)	
Top enclosure	30 (762) × 24 (609.6) × 12 (304.8)
Bottom panel	3.5 (88.9) × 19 (482.6) × 10 (254) deep
Connectors	N-Female
Finish	Decibel Tek Black™



Cutaway of base coil shown above.

One DB base matching coil is machined slotted brass, encapsulated.

Another DB base coil is polysulfone with machined slots.

DB's phasing sections resist vibration and moisture that drastically reduce the electrical performance of antennas.

(Right) Only Decibel offers a highly efficient phasing section that provides a 90% antenna aperture. Superior performance is assured by a brass sleeve with heavy chrome plate and a sealed polystyrene insulator.

Mobile Antennas—the Quest for Quality!

Three basic goals have long been at the forefront of Decibel's quest for quality in mobile antennas:

☐ Moisture must not enter!

☐ Coil wires and critical parts must not move!

☐ Performance must not deteriorate, no matter how rugged the environment!

Here's how — through design, materials and workmanship — Decibel achieves these goals.

The Mounts

Our CLASSIC™ and DECISION™ mounts are the standards by which others are judged. They are chrome plated and have exclusive Double-O-Protection™ rings to seal out moisture. Positive grip cleats provide good grounds and better efficiency. All parts and connections are uniquely designed and made to resist moisture and corrosion!

The Coils

The base matching coil for our CLASSIC mount is made of machined slotted brass over a low-loss inner core, sealed in a PVC sleeve and a chrome plated body. No conductors or soldered joints are required.

The DECISION base matching coil is wound on grooves that are machined on a low-loss polysulfone form and then ultrasonicly welded into a weather resistant ABS plastic case.

The Springs

Decibel's springs are electro polished stainless steel with chrome plated brass end pieces.

The Whips

Our whips are made of 17-7 PH stainless steel and plated first with copper for high conductivity, then with nickel chrome to protect them from corrosion.

The Phasing Sections

In the CLASSIC Series, Decibel's phasing section consists of copper plated brass over a sealed polystyrene insulator. It is so efficient that 90% of the antenna's aperture is used!

The phasing section for the DECISION Series has an ABS plastic encapsulated coil wound on grooves that are machined on a low-loss form, with chrome plated end pieces.

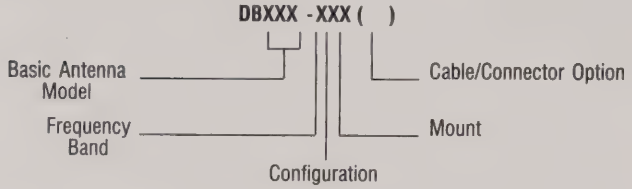
If you want quality, you want Decibel mobile antennas!

TECHNICAL APPLICATIONS
FOR MOBILE ANTENNAS, 30-512 MHz

DECIBEL

Mobile Antenna Model Identification

To provide easy ordering, the first three digits are the basic antenna model. The digits after the dash indicate frequency band, configuration and mount.



Frequency Band Code

A - 30 - 36 MHz
B - 36 - 42 MHz
C - 42 - 50 MHz
D - 66 - 88 MHz
E - 132 - 174 MHz
G - 406 - 420 MHz
H - 450 - 470 MHz
J - 470 - 488 MHz
K - 488 - 512 MHz
T - 132 - 512 MHz

Configuration Code

0 - No Spring
1 - With Spring
2 - Special Purpose

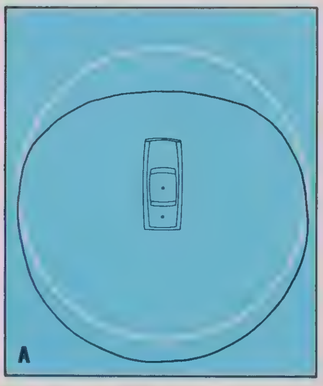
Mount

0 - No Mount
1 - Standard .75″ (19.05 mm) Mount
2 - .375″ (9.53 mm) Snap Mount
6 - No Hole Mount
7 - Magnetic Mount
8 - .75″ (19.05 mm) Low Profile Adaptor

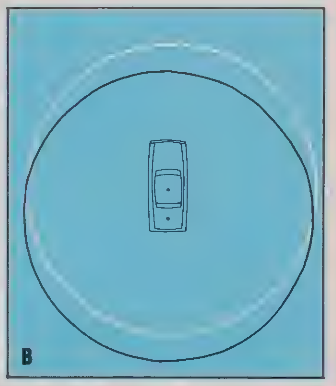
Cable Options and Connectors*

Z - .25″ (6.35 mm) SUPERFLEX
U - PL259
N - Type N (Solderable)
T - TNC Crimp-On
NC - Type N Crimp-On
UC - UHF Crimp-On
MU - Miniature UHF Crimp

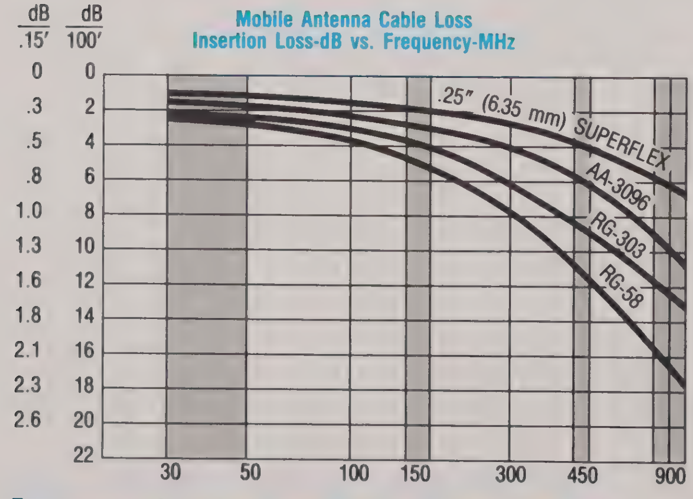
*Available as standard only on a few models. Others would be special and require minimum order.



VHF and UHF pattern comparison between quarter-wave roof mount (white) and quarter-wave trunk mount.



B pattern comparison between VHF 5/8 wave and 450 MHz collinear trunk mounts and quarter-wave roof mount (white).



Mobile Antenna Cable Loss
Insertion Loss-dB vs. Frequency-MHz

For terms and warranty, see Decibel's latest price lists.

Antenna Location

Roof Mount

The best mobile antenna location is center rooftop of the vehicle. In all frequency bands this location provides the best omni coverage for the antenna, be it quarter-wave, 7/8 wave, or collinear in design.

Trunk Mount

The second best location is the trunk deck (center or lip). Since the car roof will be shadowing the antenna, the pattern will exhibit degradation to the front of the vehicle.

Fender Mount

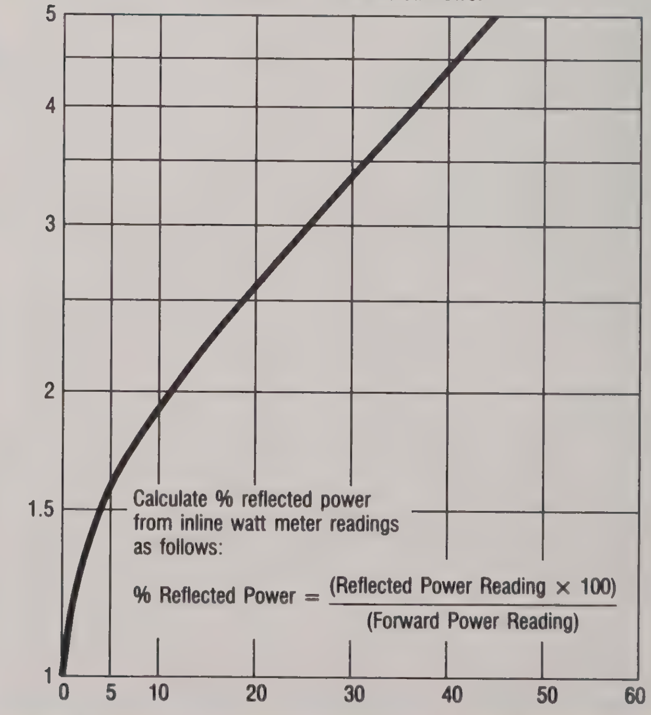
The least recommended location is the fender mount. This location will have the most pattern distortion when compared to the roof or trunk mount.

Typical Antenna Gains as Compared to a Center Roof Mounted Quarter-wave

(average passenger car)

Location	Antenna	VHF 150 MHz	UHF 460 MHz
Center roof	Quarter-wave	Unity	Unity
	VHF - 7/8 wave	2.5 dB	-
	Collinear (UHF)	-	+5.5 dB
Trunk Deck	Quarter-wave	−2.0 dB	−3.0 dB
	VHF - 7/8 wave	−0.5 dB	-
	Collinear (UHF)	-	+1.0 dB
Fender	Quarter-wave	−5.0 dB	−5.0 dB
	Collinear	+0.5 −1.0 dB	+0.5 −1.0 dB
	Collinear on Bracket	+0.5 dB −1.0 dB	+0.5 −1.0 dB

VSWR vs. % Reflected Power



Calculate % reflected power from inline watt meter readings as follows:

$$\% \text{ Reflected Power} = \frac{(\text{Reflected Power Reading} \times 100)}{(\text{Forward Power Reading})}$$

DB712 BASE LOADED, UNITY GAIN, 30-50 MHz CLASSIC™ MOBILE ANTENNAS

DB712 with Classic Chrome-Dome Mount

DB712 is a series of base loaded mobile antennas for the 30-50 MHz frequency bands.

The Classic Chrome-Dome™ is the standard solderless mount. It uses a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options include the magnetic mount and no-hole mount. All models can be ordered with or without springs.

Design and Construction

The DB712 handles up to 150 watts input power. The VSWR is 1.5 to 1 or less at a bandwidth of 0.6 MHz.

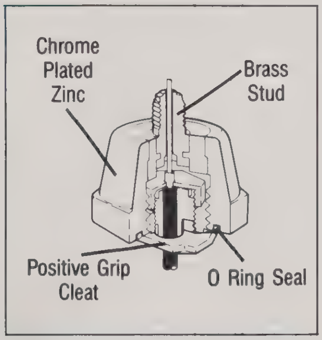
The antenna is unsurpassed for ruggedness and reliability. It consists of a shortened 17-7 PH stainless steel radiator — copper plated and then chrome plated — and a reactance matching coil with a capacitor.

The coil is precision machined brass, which eliminates soldered wires and insures exact spacing of turns. An inner polysuffone core locks the coil turns in place, and an outer PVC sleeve seals out moisture. The coil requires no field tuning, but the whip must be cut to operational frequencies.

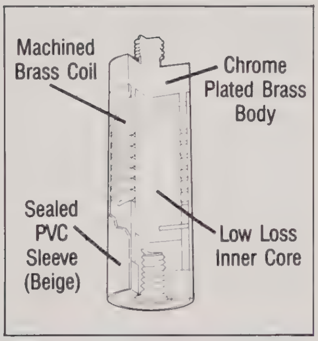
Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. A whip cutting chart is included. See table for model numbers.

Classic Hole Mount



Classic Coil



Optional No-hole Mount

Optional Magnetic Mount

Electrical Data	
Frequency Ranges — MHz	30-36, 36-42, 42-50
Gain — dB VSWR	Unity (0) 1.5 to 1 or less
Maximum power input (continuous) — watts	150

Mechanical Data	
Whip material Whip length (maximum) — in. (mm)	17-7 PH Stainless Steel 56.5 (1,435.1)
Spring material Cable, connector — ft. (m)	Nickel-Chrome Stainless Steel 15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg) (With spring, coil, base, cable, and whip)	2 (.91)

DB712 Model Numbers			
Frequency Range — MHz	30-36	36-42	42-50
STD ¾″ (19.05 mm) Hole No Spring	DB712-A01	DB712-B01	DB712-C01
STD ¾″ (19.05 mm) Hole With Spring	DB712-A11	DB712-B11	DB712-C11
No Hole/No Spring	DB712-A06	DB712-B06	DB712-C06
No Hole/With Spring	DB712-A16	DB712-B16	DB712-C16
Magnetic/No Spring	DB712-A07	DB712-B07	DB712-C07
Magnetic/With Spring	DB712-A17	DB712-B17	DB712-C17
Coil and Whip Only	DB712-A00	DB712-B00	DB712-C00
Coil, Whip and Spring Only	DB712-A10	DB712-B10	DB712-C10

DB718 QUARTER-WAVE, UNITY GAIN, 66-88 MHz DECISION™ MOBILE ANTENNAS

DB718 with Decision LO-PRO Mount

A quarter-wave, unity gain antenna for 66-88 MHz, the DB718 is designed to mount on the rooftop or trunk of a vehicle.

The standard mount is the Decision LO-PRO™ for ¾″ (19.05 mm) hole. Options include the magnetic mount and the no-hole mount.

All models are designed with springs.

Design and Construction

The DB718 handles up to 150 watts input power and has a VSWR of 1.5 to 1 or less.

It consists of the mount and a quarter-wave whip, tooled from 17-7 PH stainless steel, which must be cut to operating frequency in the field. A whip cutting table is included with the antenna.

The Decision LO-PRO mount features a zinc-plated brass stud, a positive grip cleat for better antenna efficiency, Double-O-Protection™ rings to keep water out, and a high impact strength base nut that is immune to corrosion. The spring is electro-polished stainless steel with chrome-plated brass end pieces.

Ordering Information

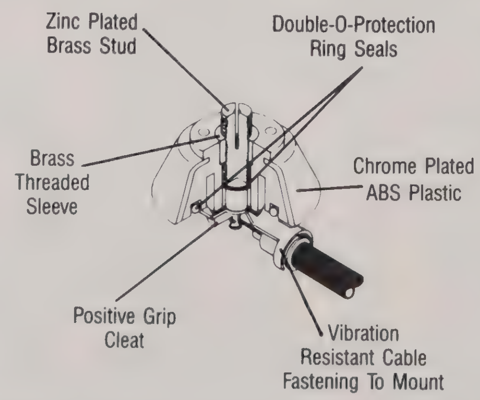
The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. See table for model numbers.

Electrical Data	
Frequency Range — MHz	66-88
Gain — dB VSWR	Unity (0) 1.5 to 1 or less
Maximum power input (continuous) — watts	150

Mechanical Data	
Whip material Whip length (maximum) — in. (mm)	17-7 PH Stainless Steel 56.5 (1,435.1)
Spring material Cable, connector — ft. (m)	Nickel-Chrome Stainless Steel 15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg)	1.2 (.54)

DB718 Model Numbers	
STD ¾″ (19.05 mm) Hole With Spring	DB718-D11
No Hole With Spring	DB718-D16
Magnetic With Spring	DB718-D17
Whip and Spring Only	DB718-D10

Decision™ LO-PRO™


Zinc Plated Brass Stud
Double-O-Protection Ring Seals
Brass Threaded Sleeve
Chrome Plated ABS Plastic
Positive Grip Cleat
Vibration Resistant Cable Fastening To Mount

Optional No-hole Mount

Optional Magnetic Mount

DB700 DB710 BROAD BAND, UNITY GAIN, 132-512 MHz DECISION™ MOBILE ANTENNAS

The DB700 and DB710 are unity gain mobile antennas for the 132-512 MHz frequency range.

The Decision LO-PRO™ mount is standard on both antennas. It uses a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options for the DB710 include the magnetic mount and the no-hole mount. The DB700 is offered with spring, the DB710 with no spring.

Design and Construction

The antennas handle up to 150 watts of input power and have a VSWR of 1.5 to 1 or less.

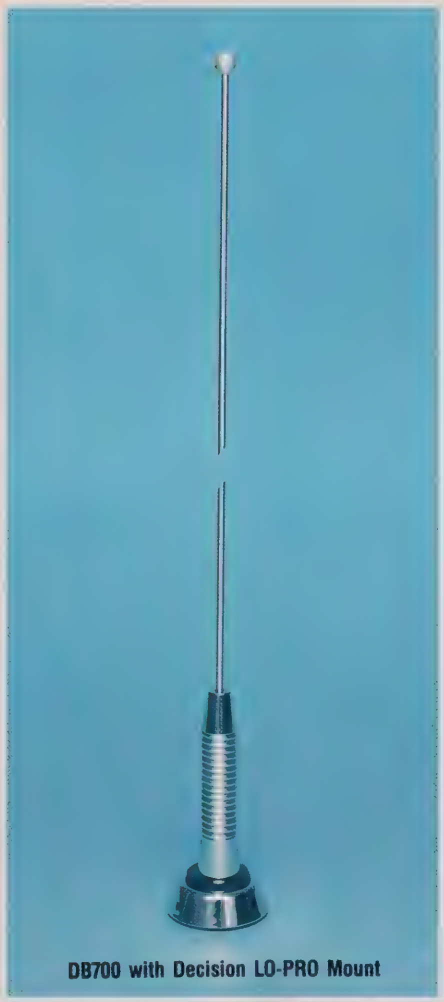
The DB700 consists of a quarter-wave 17-7 PH stainless steel radiator, a Decision LO-PRO mount and a spring made of electro-polished stainless steel with chrome-plated brass end pieces. Its broad bandwidth is ideal for multi-use frequency applications.

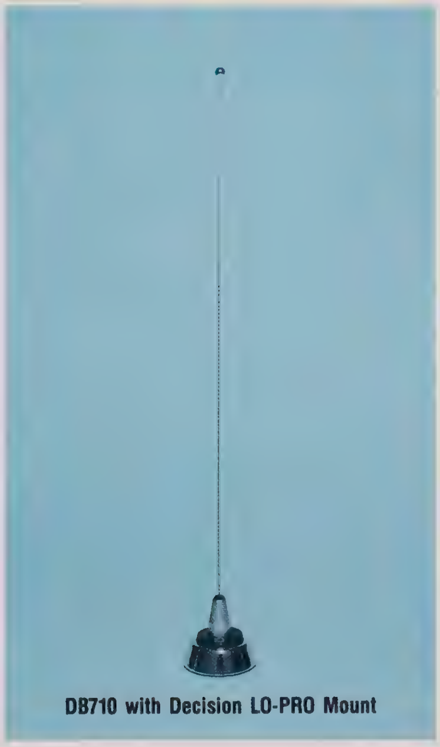
The DB710 consists of a mount and a quarter-wave radiator tooled from 17-7 PH stainless steel.

The Decision LO-PRO mount features a zinc-plated brass stud, a positive grip cleat for better antenna efficiency, Double-O-Protection™ rings to keep water out, and a high impact strength base nut that is immune to corrosion.

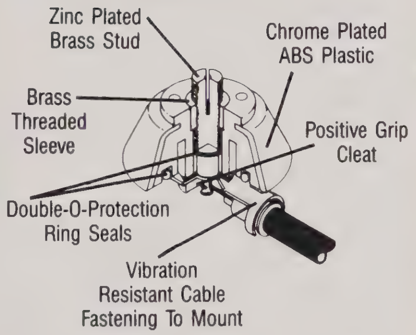
Ordering Information

The antennas come with 15′ (4.57 m) of RG-58U cable and a PL259 connector. See table for model numbers.

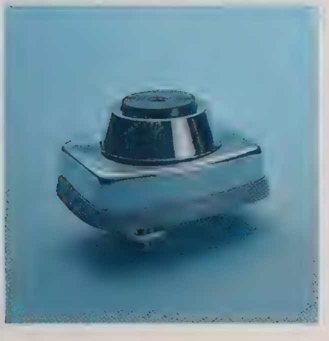

DB700 with Decision LO-PRO Mount


DB710 with Decision LO-PRO Mount

Decision LO-PRO


Zinc Plated Brass Stud
Chrome Plated ABS Plastic
Brass Threaded Sleeve
Positive Grip Cleat
Double-O-Protection Ring Seals
Vibration Resistant Cable Fastening To Mount

DB710 Optional No-hole Mount



DB710 Optional Magnetic Mount

DB700 Model Numbers	
STD ¾″ (19.05 mm) Hole/With Spring	DB700-T11
Whip and Spring Only	DB700-T10
¾″ (19.05 mm) Low Profile Replacement	DB700-T18

DB710 Model Numbers	
STD ¾″ (19.05 mm) Hole	DB710-T01
No Hole	DB710-T06
Magnetic	DB710-T07
Whip Only	DB710-T00

Electrical Data

	DB700	DB710
Frequency Ranges — MHz	150-174, 406-512	132-512
Gain — dB	Unity (0)	Unity (0)
VSWR		1.5 to 1 or less
150-174 MHz,	1.5 to 1 ±9.5 MHz 2.0 to 1 ±18 MHz	
406-512 MHz	1.5 to 1 ±35 MHz 2.0 to 1 ±60 MHz	
Maximum power input — watts	150	150

Mechanical Data

	DB700	DB710
Whip material (150-512 MHz)	17-7 Stainless Steel	302 Stainless Steel
Whip length (150 MHz) — in. (mm)	22 (558.8)	22 (558.8)
Spring material	Heavy Duty Stainless Steel	—
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg)	.7 (.32)	.5 (.23)

DB720 BASE LOADED, 2.5 dB GAIN, 132-174 MHz DECISION™ MOBILE ANTENNAS

DB720 with Decision Mount

DB720 is a series of base loaded mobile antennas with 2.5 dB gain for the 132-174 MHz frequencies.

The Decision mount is standard. It uses a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options include the magnetic mount and the no-hole mount.

All models can be ordered with or without springs.

Design and Construction

The antenna handles up to 150 watts input power and has a VSWR of 1.5 to 1 or less.

Rugged and reliable, the antenna consists of a 5/8 wavelength 17-7 PH stainless steel radiator and a base matching coil.

The coil is wound with precision on a grooved low-loss polysulfone core and then ultra sonic welded into a weather resistant ABS plastic case.

Field tuning is not required, but the whip must be cut to operational frequencies.

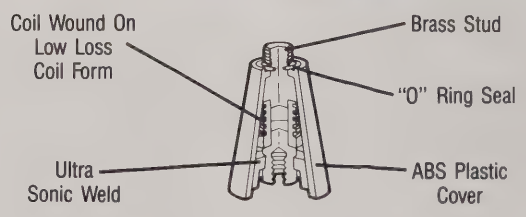
Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. A whip cutting chart is included. See table for model numbers.

Optional No-hole Mount

Optional Magnetic Mount

Decision Base Matching Coil



Electrical Data

Frequency Range — MHz	132-174
Gain — dB	2.5
VSWR	1.5 to 1 or less
Maximum power input — watts	150

Mechanical Data

Whip material	17-7 PH Stainless Steel
Whip length (150 MHz) — in. (mm)	48 (1,219.2)
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg) (Whip, base and cable)	.8 (.36)

DB720 Model Numbers

Frequency Range — MHz	132-174
STD ¾″ (19.05 mm) Hole/No Spring	DB720-E01
STD ¾″ (19.05 mm) Hole/With Spring	DB720-E11
No Hole/No Spring	DB720-E06
No Hole/With Spring	DB720-E16
Magnetic/No Spring	DB720-E07
Magnetic/With Spring	DB720-E17
Coil and Whip Only	DB720-E00
Coil, Spring and Whip Only	DB720-E10

DB702 BASE LOADED, 2.5 dB GAIN, 132-174 MHz CLASSIC™ MOBILE ANTENNAS

DECIBEL

DB702 is a series of base loaded mobile antennas with 2.5 dB gain for the 132-174 MHz frequencies.

The Classic Chrome-Dome™ is the standard mount. It requires a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options include the magnetic mount and the no-hole mount.

All models can be ordered with or without springs.

Design and Construction

The antenna handles up to 150 watts input power. The VSWR is 1.5 to 1 or less at a bandwidth of 3.5 MHz.

Rugged and reliable, the antenna consists of a 5/8 wavelength 17-7 PH stainless steel radiator — copper plated and then chrome plated — and a reactance matching coil.

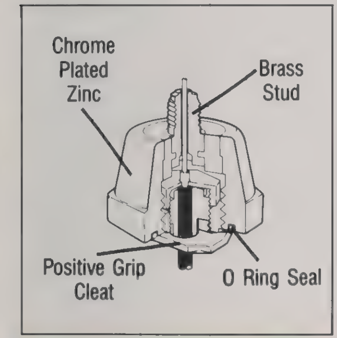
The coil is precision machined brass, which eliminates soldered wires and insures exact spacing of turns. An inner polysulfone core locks the coil turns in place, and an outer PVC sleeve seals out moisture.

The coil requires no field tuning, but the whip must be cut to operational frequencies.

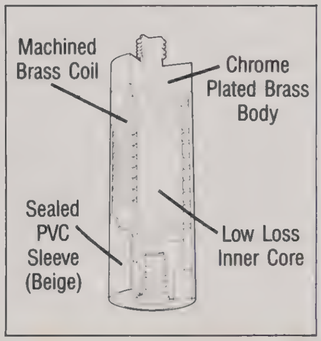
Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. A whip cutting chart is included. See table for model numbers.

Classic Hole Mount



Classic Coil



Optional No-hole Mount

Optional Magnetic Mount

DB702 with Classic Chrome-Dome Mount

Electrical Data	
Frequency Range — MHz	132-174
Gain — dB VSWR	2.5 1.5 to 1 or less
Maximum power input — watts	150

Mechanical Data	
Whip material Whip length (150 MHz) — in. (mm)	17-7 PH Stainless Steel 48 (1,219.2)
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg) (Whip, base and cable)	.8 (.36)

DB702 Model Numbers	
STD ¾″ (19.05 mm) Hole/No Spring	DB702-E01
STD ¾″ (19.05 mm) Hole/With Spring	DB702-E11
No Hole/No Spring	DB702-E06
No Hole/With Spring	DB702-E16
Magnetic/No Spring	DB702-E07
Magnetic/With Spring	DB702-E17
Replacement Antenna and Adaptor	DB702-E08
Coil and Whip Only	DB702-E00
Coil, Whip and Spring Only	DB702-E10

DB705 5 dB GAIN, 406-512 MHz CLASSIC™ MOBILE ANTENNAS

DECIBEL

The DB705 is a series of 5 dB gain mobile antennas, with enclosed phasing sections, for the 406-512 MHz frequency bands.

The Classic Chrome-Dome™ is the standard solderless mount. It uses a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options include the magnetic mount and the no-hole mount.

All models have springs.

Design and Construction

The antenna handles up to 150 watts input power. The VSWR is 1.5 to 1 or less at a bandwidth of 3.5 MHz.

Rugged and reliable, the antenna consists of a 5/8 wavelength 17-7 PH stainless steel radiator — copper plated and then chrome plated — plus an enclosed phasing section and mounting base.

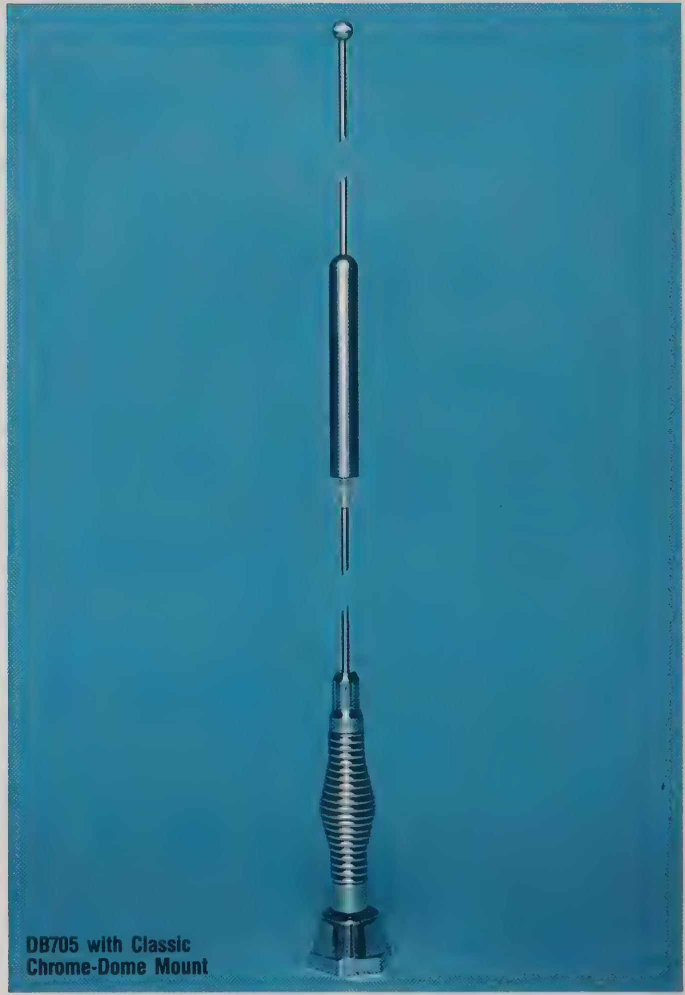
The solderless mount features a brass stud, "O" ring sealing to keep moisture out and a positive grip cleat to give it a good ground.

The antenna's gain is achieved through the use of a high efficiency phasing section that is chrome plated machined brass. It allows utilization of 90% of the antenna aperture.

Neither the coil nor the phasing section requires tuning, but the whip must be cut to operational frequencies.

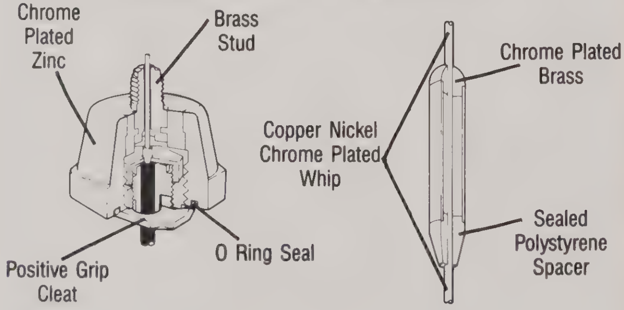
Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. A whip cutting chart is included. See table for model numbers.

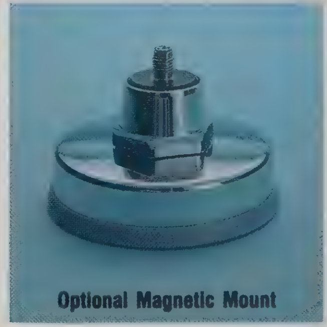


DB705 with Classic Chrome-Dome Mount

Classic Hole Mount and Phasing Section



Optional No-hole Mount



Optional Magnetic Mount

Mechanical Data

Whip material	17-7 PH Stainless Steel
Spring material	Electropolished Stainless Steel
Overall length (spring and coil) — in. (mm)	
406 MHz	32.5 (825.5)
450 MHz	29.5 (749.3)
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg) (DB705-G11 with base and cable)	2 (.91)

Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488, 488-512
Gain (DB705)* — dB	5.0
VSWR	1.5 to 1 or less
Maximum power input — watts	150

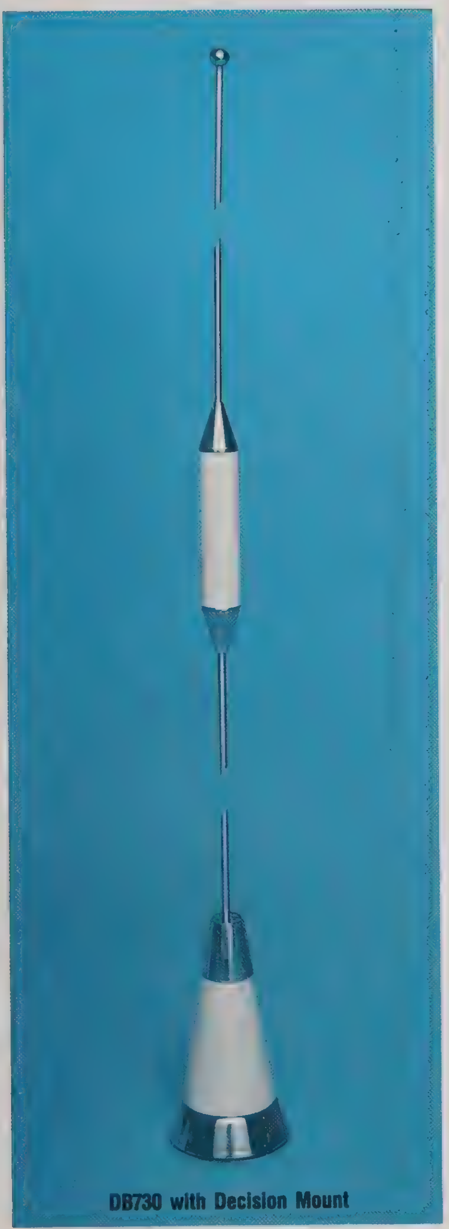
*Gain and bandwidth are reduced in the 406-420 MHz band.

DB705 Model Numbers

Frequency Range — MHz	406-420	450-470	470-488	488-512
STD ¾″ (19.05 mm) Hole/With Spring	DB705-G11	DB705-H11	DB705-J11	DB705-K11
No Hole/With Spring	DB705-G16	DB705-H16	DB705-J16	DB705-K16
Magnetic/With Spring	DB705-G17	DB705-H17	DB705-J17	DB705-K17
¾″ (19.05 mm) TAE/Replacement	DB705-G18	DB705-H18	DB705-J18	DB705-K18
Spring and Whip Only	DB705-G10	DB705-H10	DB705-J10	DB705-K10

DB730 BASE LOADED, 5.5 dB GAIN, 406-512 MHz DECISION™ MOBILE ANTENNAS

DECIBEL


DB730 with Decision Mount

DB730 is a series of base loaded mobile antennas — with enclosed phasing sections — that provide 5.5 dB gain for the 406-512 MHz frequency bands.

The Decision mount is standard. It uses a ¾″ (19.05 mm) hole and mounts to the rooftop or trunk of a vehicle. Options include the magnetic mount and the no-hole mount.

All models can be ordered with or without springs.

Design and Construction

The antenna handles up to 150 watts of input power and has a VSWR of 1.5 to 1 or less.

Rugged and reliable, the antenna consists of a 17-7 PH stainless steel whip, enclosed phasing section and base matching coil.

The coil is wound with precision on a grooved low-loss polysulfone core and then ultra sonic welded into a weather resistant ABS plastic case.

The phasing section is also a precision wound coil on a grooved low-loss coil form with an injected molded ABS cover.

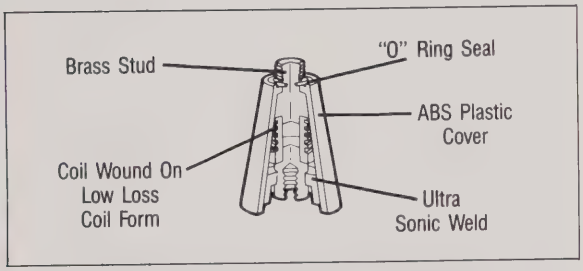
Field tuning is not required, but the lower section of the whip must be cut to operational frequencies.

Ordering Information

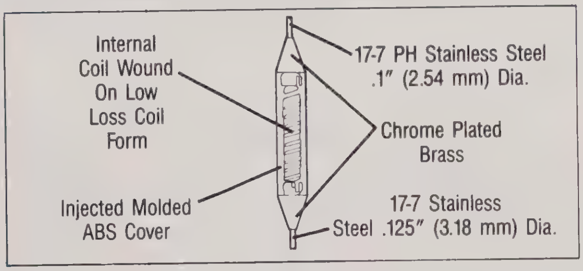
The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. A whip cutting chart is included. See table for model numbers.

Optional No-hole Mount

Optional Magnetic Mount



Decision Coil (Above) and Phasing Section


Internal Coil Wound On Low Loss Coil Form
17-7 PH Stainless Steel .1″ (2.54 mm) Dia.
Chrome Plated Brass
Injected Molded ABS Cover
17-7 Stainless Steel .125″ (3.18 mm) Dia.

Mechanical Data

Whip material Spring material	17-7 PH Stainless Steel Electropolished Stainless Steel
Overall length (spring and coil) — in. (mm) 406 MHz 450 MHz	 41.6 (1,056.64) 38.6 (980.44)
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg) (DB705-G11 with base and cable)	1.5 (.68)

Electrical Data

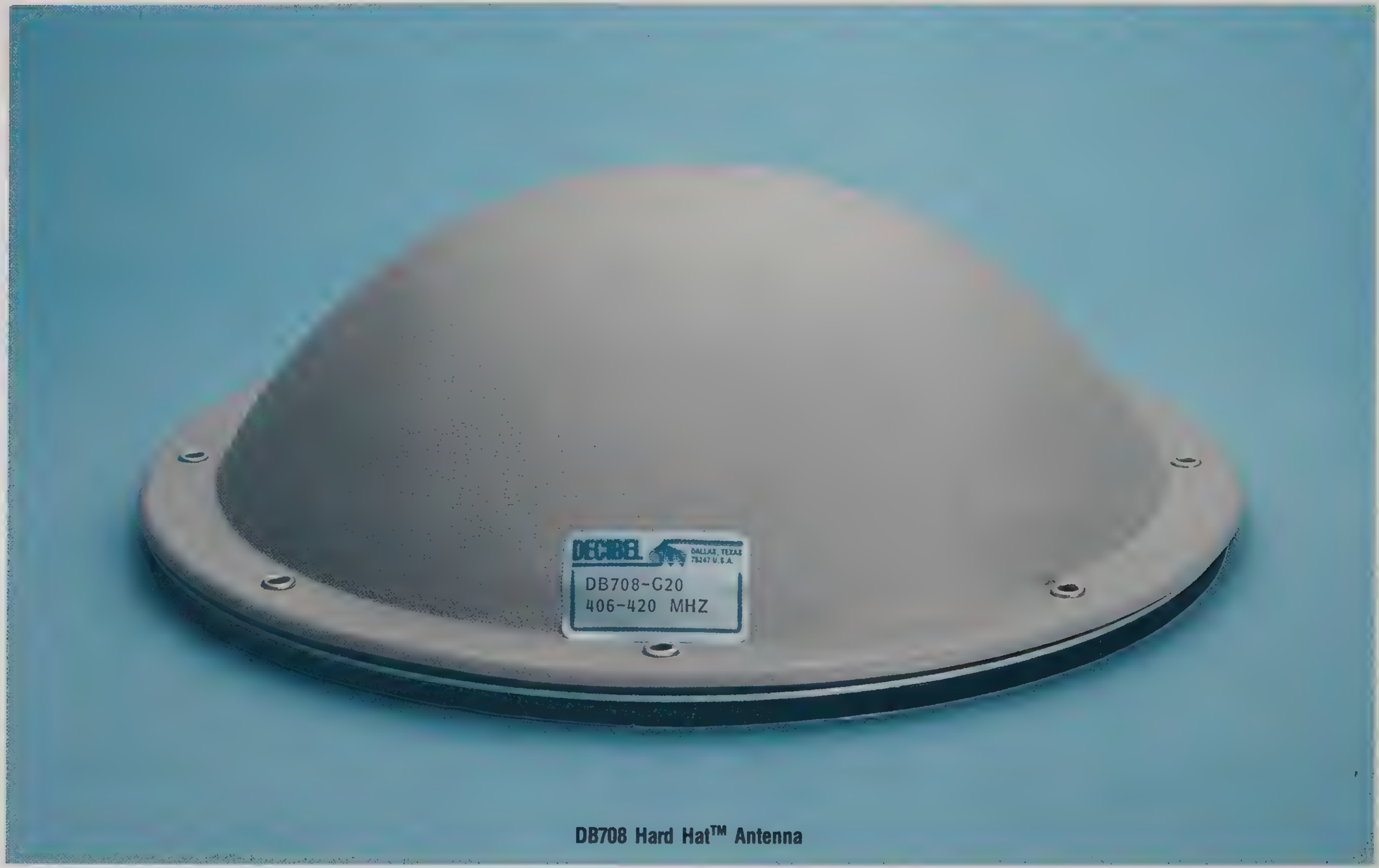
Frequency Ranges — MHz	406-420, 450-470, 470-488, 488-512
Gain (DB705)* — dB VSWR	5.5 1.5 to 1 or less
Maximum power input — watts	150

*Gain and bandwidth are reduced in the 406-420 MHz band.

DB730 Model Numbers

Frequency Range — MHz	406-420	450-470	470-488	488-512
STD ¾″ (19.05 mm) Hole/No Spring	DB730-G01	DB730-H01	DB730-J01	DB730-K01
STD ¾″ (19.05 mm) Hole/With Spring	DB730-G11	DB730-H11	DB730-J11	DB730-K11
No Hole/Trunk	DB730-G06	DB730-H06	DB730-J06	DB730-K06
No Hole/With Spring/Trunk	DB730-G16	DB730-H16	DB730-J16	DB730-K16
Magnetic/No Spring	DB730-G07	DB730-H07	DB730-J07	DB730-K07
Magnetic/With Spring	DB730-G17	DB730-H17	DB730-J17	DB730-K17
Less Mount/Cable/Connector	DB730-G00	DB730-H00	DB730-J00	DB730-K00
Less Mount/Cable/Connector/With Spring	DB730-G10	DB730-H10	DB730-J10	DB730-K10

DB708 HARD HAT™ MOBILE ANTENNA UNITY GAIN, 406-512 MHz



DB708 Hard Hat™ Antenna

Designed for severe environments, this rugged special purpose antenna provides an omnidirectional pattern in the 406-512 MHz frequency bands. Its low 2.5″ (63.5 mm) profile and 10″ (254 mm) diameter give it an attractive shape that protects from overhead obstructions, car washes and vandals.

The Hard Hat mounts on any flat surface and does not need a metal ground plane. This makes it ideal for fiberglass vehicles and boats as well as for cars, trucks and industrial vehicles. It can also be used inside or atop buildings for paging, security alarm systems and standard base station operations that need a "disguised" appearance.

Design and Construction

The DB708 includes a loop radiator mounted over a ground plane and covered by an ABS resin plastic radome. It handles power inputs to 125 watts and provides bandwidths from 14 to 24 MHz with a VSWR of 2 to 1 or less.

The antenna mounts with sheet metal screws, and a neoprene gasket with adhesive on each side assures a watertight seal between the antenna and the mounting surface.

It is factory tuned and requires no field adjustment.

Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and a PL259 connector. Gasket and mounting screws are included. See table for model numbers.

Electrical Data

Frequency Ranges — MHz	406-420, 450-470, 470-488, 488-512
Bandwidth	Same as above
VSWR	2 to 1 or less
Maximum power input — watts	125
Polarization	Vertical
Horizontal pattern	Omnidirectional

DB708 Model Numbers

Frequency Range — MHz	
406-420	DB708-G20
450-470	DB708-H20
470-488	DB708-J20
488-512	DB708-K20

Mechanical Data

Radome material	ABS Resin
Radiator material	Brass, Copper
Ground plane material	Aluminum
Gasket material	Closed cell, Neoprene sponge
Height — in. (mm)	2.5 (63.5)
Diameter (maximum) — in. (mm)	10 (254)
Color	Decibel Tek Black™ (other colors in large quantities)
Cable, connector — ft. (m)	15 (4.57) RG-58U, PL259
Shipping weight — lbs. (kg)	1.5 (.68)
Mounting	Eight sheet metal screws supplied. A .31″ (7.93 mm) hole required for cable entrance

Mobile Antennas—the Quest for Quality!

Decibel maintains its own test range where base station and mobile antennas are analyzed and compared, using the latest test equipment.

In addition, thousands of measurements have been made using Dallas, Texas as a test site. Dallas is quite typical of other cities with its 60-story buildings downtown, its flat rolling terrain to the north and its hilly, dense woods to the south.

In general, our tests have shown that quality antennas outperform the cheaper ones, especially in areas with difficult propagation characteristics.

Also in general, Decibel's mobile antennas perform better than competitors' do!

We have also found that the installation of an antenna is extremely important; a poorly installed antenna can bring disaster to a superior radio system.

Where to mount mobile antennas

Decibel has made extensive tests to find out how different types of mobile antennas perform at various mounting locations on a car — top, trunk, glass and fender.

In one analysis, over 1,300 measurements were made and analyzed by computer, using 800/900 MHz (1) quarter-wave whip, (2) glass-mount, (3) elevated-feed, (4) low-profile and (6) base-loaded whip antennas.

The results are summarized in charts on the following pages.

Generally speaking, the best vehicle mounting locations have proved to be, in the order listed, (1) top center, (2) elevated left or right side of the trunk, (3) elevated center trunk, (4) center of the rear window (for glass mount), and (5) elevated fender. A quarter-wave antenna mounted in the center of the roof was used as the standard pattern.

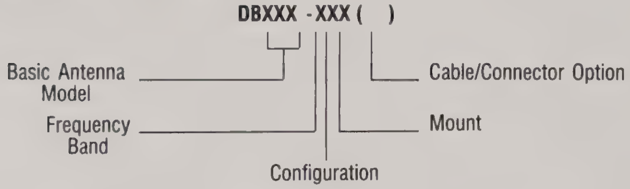
Our test range helps us design better antennas and antenna systems equipment. Without a doubt, it's a decisive tool in Decibel's quest for quality.

If you want quality, you want Decibel's mobile antennas!

TECHNICAL APPLICATIONS
FOR MOBILE ANTENNAS, 806-960 MHz

Mobile Antenna Model Identification

To provide easy ordering, the first three digits are the basic antenna model. The digits after the dash indicate frequency band, configuration and mount.



Frequency Band Code

L - 806 - 870 MHz
P - 806 - 960 MHz

Mount

0 - No Mount
1 - Standard .75″ (19.05 mm) Mount
2 - .375″ (9.53 mm) Snap Mount
6 - No Hole Mount
7 - Magnetic Mount
8 - .75″ (19.05 mm) Low Profile Adaptor

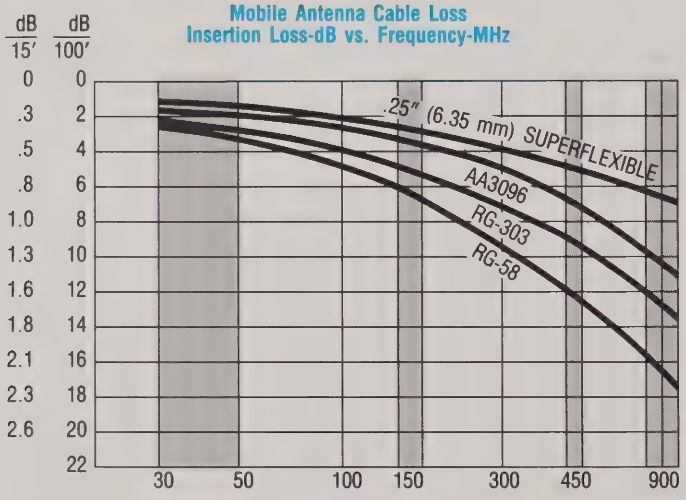
Cable Options and Connectors*

Z - .25″ (6.35 mm) SUPERFLEXIBLE
U - PL259
N - Type N (Solderable)
T - TNC Crimp-On
NC - Type N Crimp-On
UC - UHF Crimp-On
MU - Miniature UHF Crimp

Configuration Code

0 - No Spring
1 - With Spring
2 - Special Purpose

*Available as standard only on a few models. Others would be special and require minimum order.


Mobile Antenna Cable Loss
Insertion Loss-dB vs. Frequency-MHz

Typical Antenna Gains as Compared to a Center Roof Mounted Quarter-wave

(average passenger car)

Location	Antenna	800/900 MHz
Center Roof	Quarter-wave	0
	7/8 wave	3.0 dB
Trunk Deck	Quarter-wave	−3.3 dB
	Elevated Feed	See Patterns
Fender	Quarter-wave	See Patterns
	7/8 wave	See Patterns
	Elevated Feed	See Patterns
Glass Mount dB	Center Rear Window	See Patterns
	Right or left Rear Window	See Patterns

Cable Recommendations

Low loss cable is standard on all 806-960 MHz models including DB58U where applicable. Other cable requirements can be met by one of the following cables in 15′ (4.57 m) lengths or bulk.

AA3096

Recommended for higher temperature, high frequency operation, this low loss cable maintains good flexibility for installation ease.

.25″ (6.35 mm) SUPERFLEXIBLE

This low loss HELIAX® cable is recommended for high frequency operation requiring some flexibility but minimum insertion loss.

Antenna Location

The following page has antenna patterns comparing various vehicle placement locations. These patterns were developed at Decibel's mobile antenna test range.

Roof Mount

The best mobile antenna location is center rooftop of the vehicle. In all frequency bands this location provides the best omni coverage for the antenna, be it quarter-wave, 7/8 wave or collinear in design.

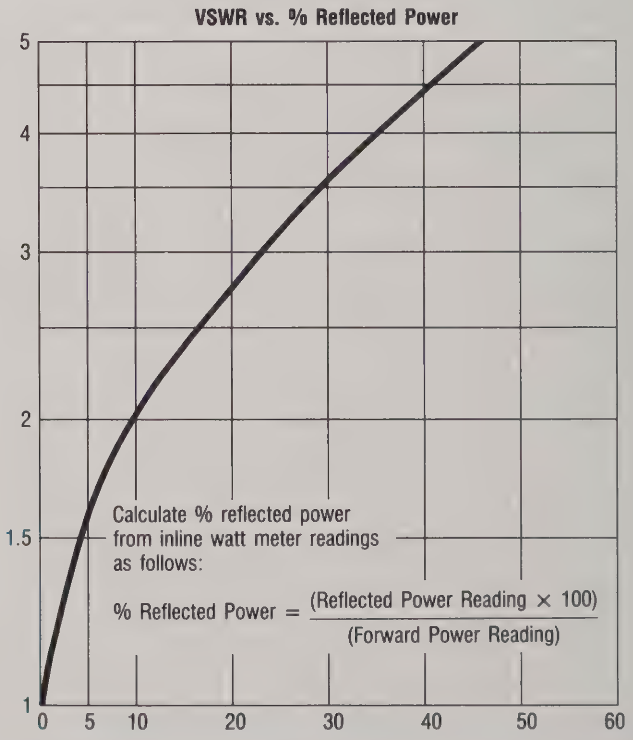
Trunk Mount

The second best location is the trunk deck (center or lip). Since the car roof will be shadowing the quarter-wave antenna, the pattern will exhibit degradation to the front of the vehicle.

The 800 MHz gain antenna, when trunk deck mounted, will have some pattern degradation to the front of the vehicle.

Fender Mount

The least recommended location is the fender mount. This location will have the most pattern distortion when compared to the roof or trunk mount. For 800/900 MHz mobile antennas without integral ground planes, mounting on right angle brackets is not recommended.


VSWR vs. % Reflected Power

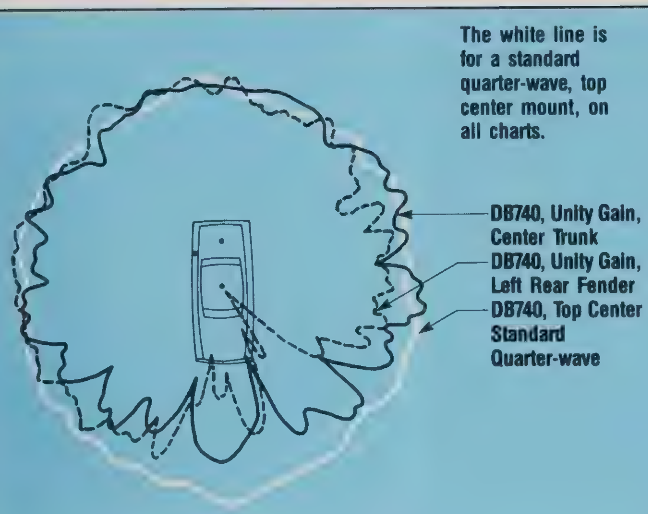
Calculate % reflected power from inline watt meter readings as follows:

$$\% \text{ Reflected Power} = \frac{(\text{Reflected Power Reading} \times 100)}{(\text{Forward Power Reading})}$$

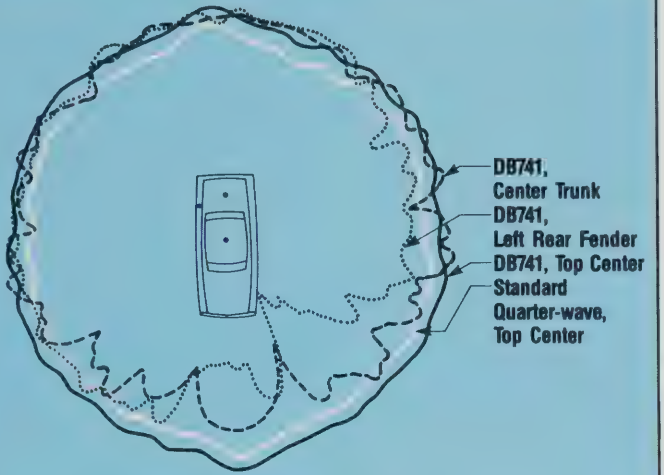
For terms and warranty, see Decibel's latest price lists.

HELIAX is a registered trademark of Andrew Corporation.

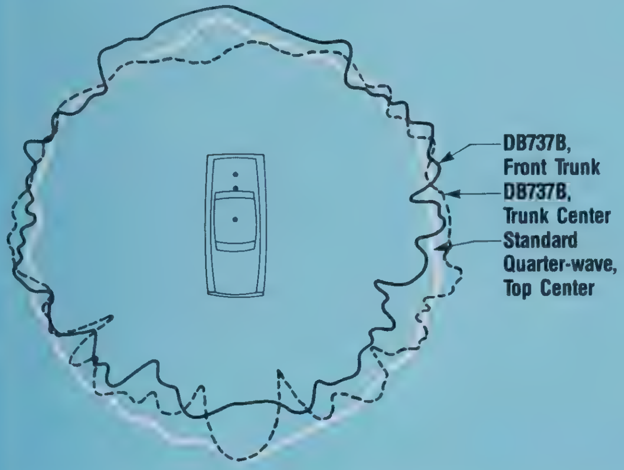
PATTERN COMPARISONS OF 800/900 MHz MOBILE ANTENNAS


The white line is for a standard quarter-wave, top center mount, on all charts.

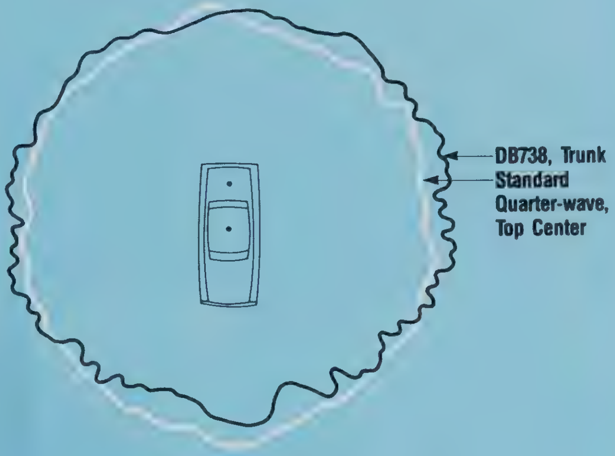
Quarter-wave Button Mount™ antenna. Metal mounting surface (ground plane) required.



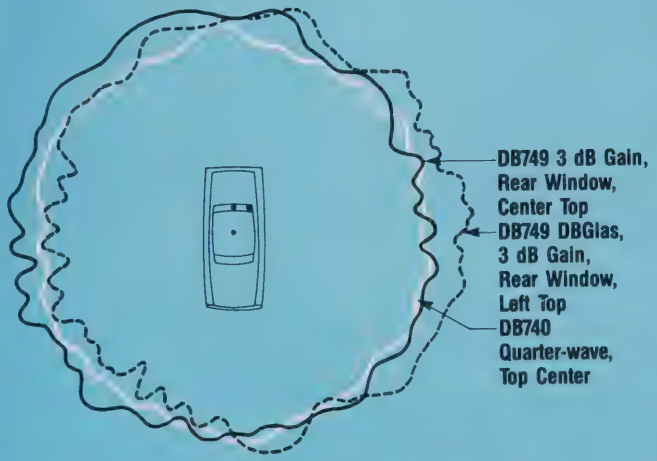
3 dB gain antenna. Metal mounting surface required.



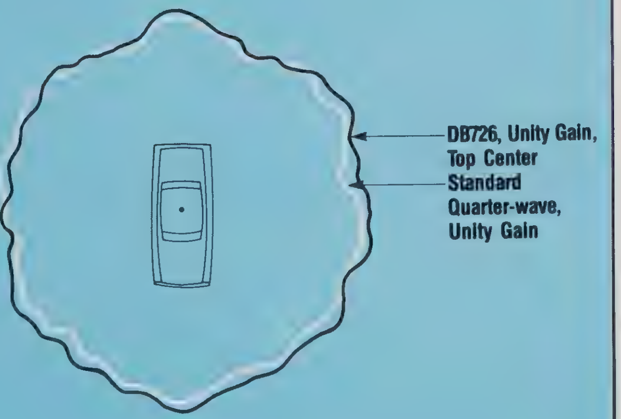
Elevated feed 3 dB gain antenna. Metal mounting surface not required.



Elevated feed 3 dB gain antenna. Metal mounting surface not required.



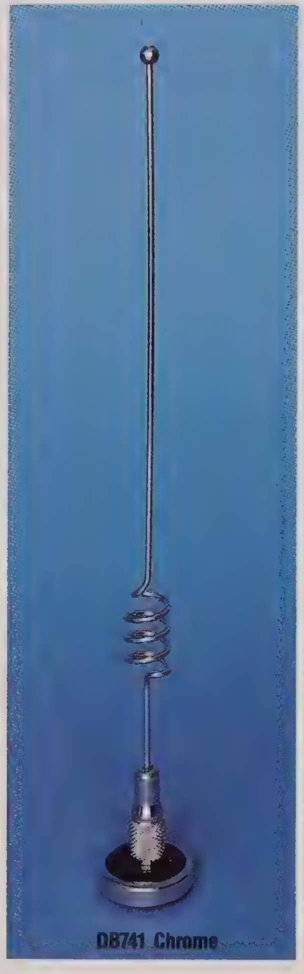
3 dB gain glass-mounted antenna. Ground plane not required.



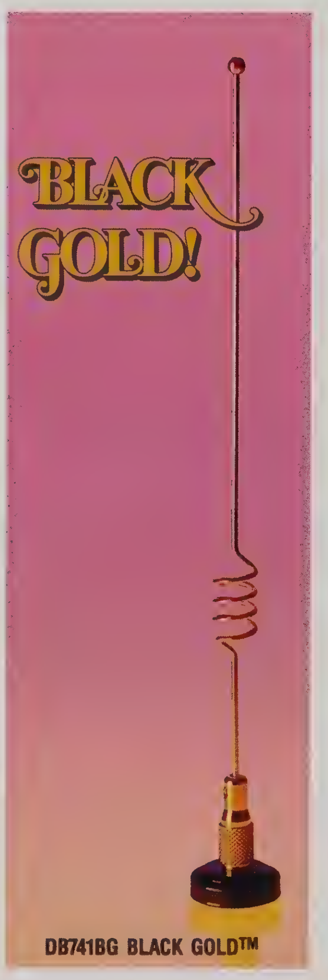
Rugged Low Profile antenna. A metal mounting surface provides best pattern, but is not required.

DB740 UNITY or 3 dB GAIN, 806-960 MHz
DB741 BUTTON™ MOBILE ANTENNAS

DECIBEL

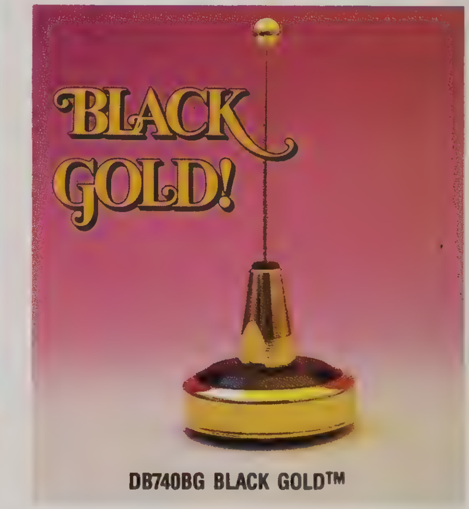

DB741 Chrome

DB741B Silhouette™



DB741BG BLACK GOLD™

DB740 Chrome Quarter-wave



DB740BG BLACK GOLD™

DB740 Antenna

The DB740 and DB740BG are unity gain, quarter-wave mobile antennas that handle 125 watts input power for conventional, trunked or cellular radios in the 806-960 MHz frequencies.

The stainless steel whip is only 3.95″ (100.33 mm) tall, and the BUTTON™ base is standard. It mounts via a ¾″ (19.05 mm) hole to the rooftop or trunk of a vehicle.

The BUTTON mount features a zinc-plated brass stud, a positive grip cleat, Double-O-Protection™ rings to keep water out, and a high impact base nut.

DB741 Antenna

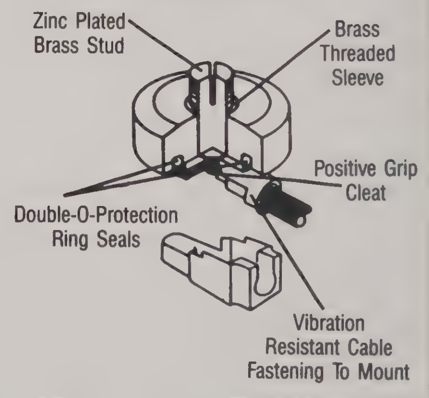
The DB741 is a 15″ (381 mm) antenna that handles 100 watts input and provides 3 dB gain for conventional, trunked and cellular radios in the 806-960 MHz frequencies. It mounts via a ¾″ (19.05 mm) hole to the rooftop or trunk of a vehicle; however, field tests show that the rooftop gives best performance. The standard mount is the BUTTON, described earlier. The whip is made of 17-7 stainless steel.

Three models of this antenna are offered, the DB741 Chrome, the DB741B matte-black Silhouette™, and the DB741BG BLACK GOLD™.

Ordering Information

The DB740 and the DB741 come with RG-58U cable and the DB741 with a choice of connectors. Order the DB740 or DB740BG for quarter-wave unity gain, or the DB741 Chrome, DB741B all-black Silhouette and DB741BG BLACK GOLD for 3 dB gain.

Button Mount


Zinc Plated Brass Stud
Brass Threaded Sleeve
Positive Grip Cleat
Double-O-Protection Ring Seals
Vibration Resistant Cable Fastening To Mount

Electrical Data

	DB740	DB741
Frequency Range — MHz	806-960	806-960
Gain — dB	Unity (0)	3
VSWR	1.5 to 1	1.5 to 1
Maximum power input — watts	125	100

Mechanical Data

	DB740	DB741
Whip material	Stainless Steel	Stainless Steel
Overall length — in. (mm)	3.95 (100.33)	15 (381)
Cable	RG-58U	RG-58U
Connectors	Type N, Type N Crimp-On, TNC Crimp-On, UHF Crimp-On	
Shipping weight — lbs. (kg)	.5 (.23)	1.25 (.56)

DB738 3 dB GAIN, 806-960 MHz
DB732 MOBILE ANTENNAS

DECIBEL

DB738 Antenna

The DB738 is a 3 dB gain, elevated feed antenna that mounts, via a 1″ (25.4 mm) hole, to the trunk or fender of a vehicle with up to 15° of vertical adjustment.

It handles 50 watts input from conventional, trunked and cellular radios in the 806-960 MHz frequencies.

Because the DB738 works independently of the mounting surface, it is ideal for fiberglass cars and boats. The antenna's 21″ (533.4 mm) height minimizes the obstruction of the passenger compartment so that the antenna gives excellent performance.

DB732 Antenna

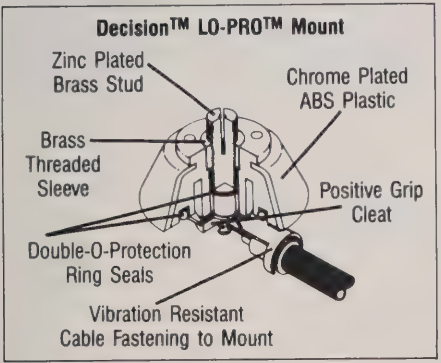
The DB732 is a 15″ (381 mm) antenna that handles 100 watts input and provides 3 dB gain for conventional, trunked and cellular radios in the 806-960 MHz frequencies.

It mounts via a ¾″ (19.05 mm) hole to the rooftop or trunk of a vehicle; however, field tests show that the rooftop gives best performance. The standard mount is the Decision LO-PRO™, which features a zinc-plated brass stud, a positive grip cleat for better antenna efficiency, Double-O-Protection™ rings to keep water out, and a high impact strength base nut that is immune to corrosion.

Both the DB738 and the DB732 have 17-7 stainless steel whips, and they are designed to resist moisture and deterioration.

Ordering Information

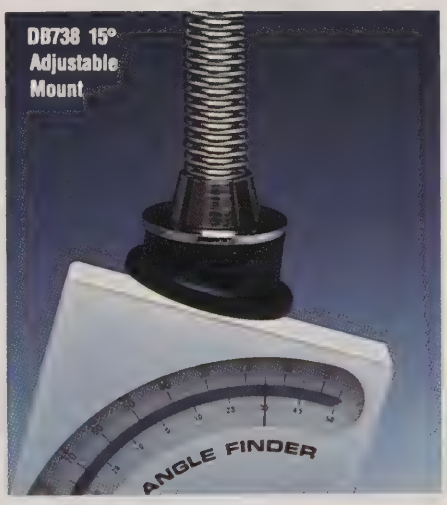
These antennas come with 15′ (4.57 m) of RG-58U cable and a choice of connectors. Order the DB732 or DB738 with adjustable mount.



Decision™ LO-PRO™ Mount

Zinc Plated Brass Stud
Chrome Plated ABS Plastic
Brass Threaded Sleeve
Positive Grip Cleat
Double-O-Protection Ring Seals
Vibration Resistant Cable Fastening to Mount

DB732 LO-PRO Mount



DB738 15° Adjustable Mount

DB738 Adjustable Mount

Electrical Data

	DB738	DB732
Frequency Range — MHz	806-960	806-960
Gain — dB	3	3
VSWR	1.9 to 1	1.5 to 1
Maximum power input — watts	50	100

Mechanical Data

	DB738	DB732
Whip material	Stainless Steel	Stainless Steel
Overall length — in. (mm)	21 (533.4)	15 (381)
Cable	RG-58U	RG-58U
Connector	Type N, Type N Crimp-On, TNC Crimp-On, Mini-UHF Crimp	Type N, Type N Crimp-On, TNC Crimp-On, UHF Crimp
Shipping weight — lbs. (kg)	2.5 (1.13)	1.50 (.68)

DB737 TRUNK-EDGE MOUNT, ELEVATED-FEED, 3 dB GAIN, 806-960 MHz, MOBILE ANTENNAS

DB737 Chrome Antenna

DB737B Silhouette™ Antenna

DB737BG™ BLACK GOLD™ Antenna

A 3 dB gain, elevated feed antenna, the DB737 mounts to the edge of a vehicle trunk with only two setscrews, in just three minutes. It handles 50 watts input from conventional, trunked or cellular radios in the 806-960 MHz frequencies.

The mount adjusts to almost any angle and can be reversed. There's no hole to drill and the cable does not route through the passenger compartment. Also, there are no glass-coupling or ground problems because the antenna has a built-in ground plane. This makes it ideal for fiberglass cars and boats, also.

The antenna is available in chrome, DB737, in matte-black, DB737B Silhouette™, and in no-flake 24-karat BLACK GOLD™, DB737BG™.

Superior Performance

Performance tests in a suburban environment showed that this antenna outperformed window-mounted and quarter-wave antennas by up to 3 dB.

One reason is that the antenna's 21″ (533.4 mm) height minimizes the obstruction of the passenger compartment. Another reason is that there are no glass-coupling or ground problems.

Decibel recommends that the antenna be mounted on either side of the trunk, although it can be centered behind the rear window.

It can usually take the car wash in stride; however, to be perfectly safe, the radiator can be removed easily and replaced after the wash.

Unique design features keep moisture out of the antenna, and every part resists deterioration and signal loss.

Ordering Information

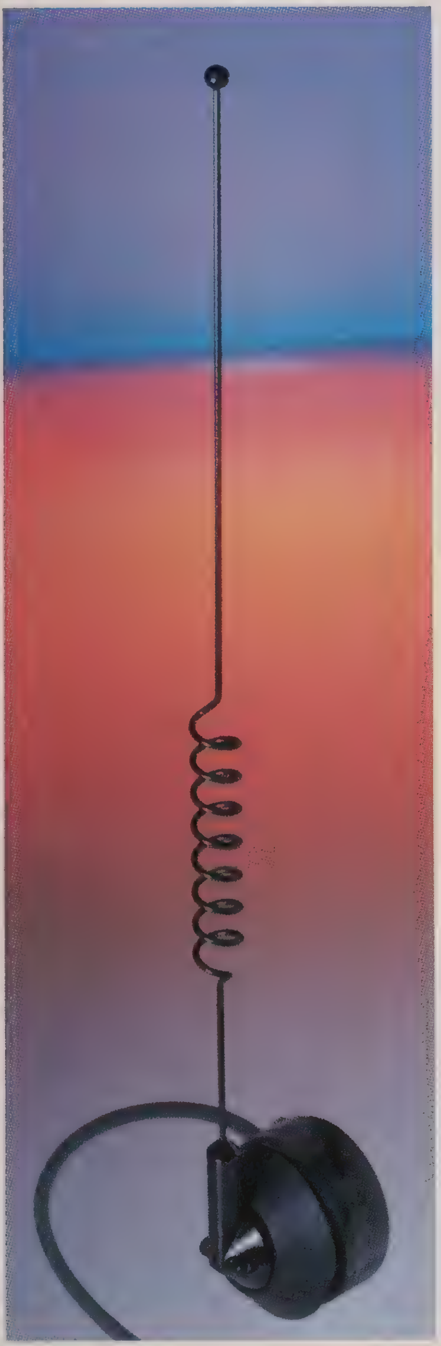
The antenna comes with 15′ (4.57 m) of RG-58U cable and your choice of factory-installed connector. Order the DB737 chrome, DB737B all-black Silhouette, and DB737BG BLACK GOLD antennas.

Electrical Data	
Frequency Range — MHz	806-960
Gain — dB	3
VSWR	1.5 to 1
Maximum power input — watts	50

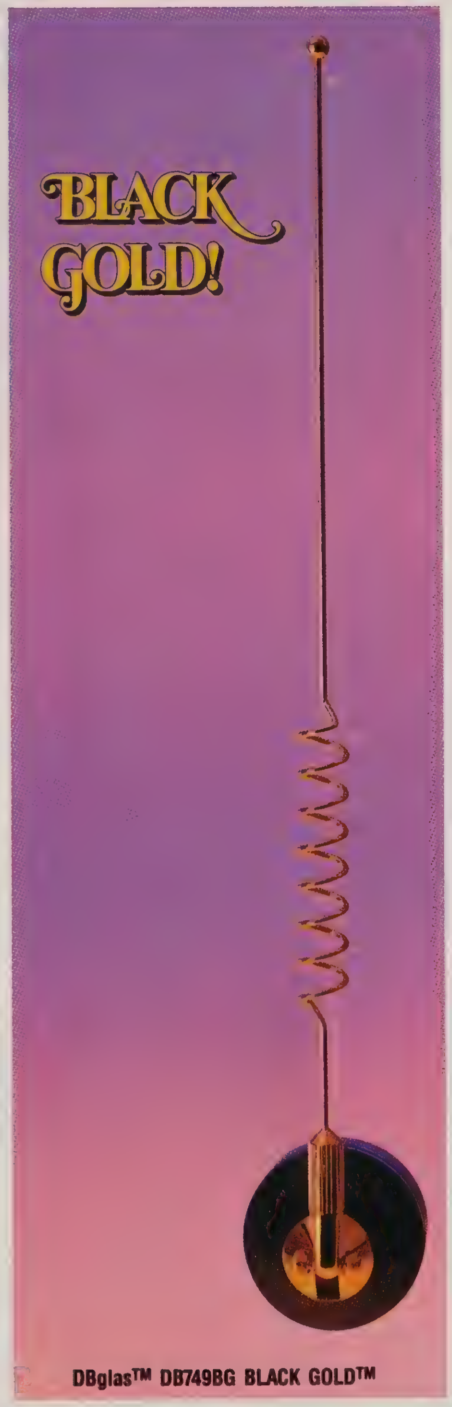
Mechanical Data	
Whip material	Stainless Steel
Overall length — in. (mm)	21 (533.4)
Cable — dB Low Loss	RG-58U
Connector	Type N, Type N Crimp-on, TNC Crimp-on, Mini-UHF Crimp
Shipping weight — lbs. (kg)	1.25 (.57)

DECIBEL

DB749B GLASS-MOUNT MOBILE ANTENNA DBglas™ SERIES, 824-960 MHz



DBglas™ DB749B Silhouette™



DBglas™ DB749BG BLACK GOLD™

Available for conventional, trunked and cellular services, the DBglas mobile antenna is protected under Patent No. 4,089,817 and offered in matte-black Silhouette™ as DB749B and in BLACK GOLD™ as DB749BG.

It mounts on the window of any car or truck. With no hole! No paint marring! No concern about defroster wires! And with minimal signal loss through the glass!

Features

The antenna is factory tuned to cover System A and B North American and International cellular frequencies for an optimum VSWR of 1.9 to 1 or better.

It can be fine tuned for problem installations.

There are no unsightly connector or cable inside the vehicle. The DBglas cable is built into the interior coupler tuning module, which eliminates connector glare, reduces radiation and makes it easy to conceal the cable into the molding.

The radiator is made of 17-7 PH stainless steel with either an oven-cured, matte-black finish or with tough no-flake 24-karat gold plating.

The whip provides unobstructed horizontal and vertical radiation patterns. It removes without tools and no water collects in the base when the whip is off.

Ordering Information

The antenna comes with 15′ (4.57 m) of RG-58U cable and your choice of connector. See tables for specifications and model numbers.

Electrical Data

Frequency Ranges — MHz	824-894, 890-960
Gain — dB	3
VSWR	1.9 to 1
Maximum power input — watts	50

Mechanical Data

Whip material	Stainless Steel
Overall length — in. (mm)	13 (330.2)
Cable	RG-58U
Connector	Type N Crimp-On, TNC Crimp-On, Mini-UHF Crimp
Shipping weight — lbs. (kg)	3 (1.36)

DB749 Model Numbers

Frequency Range — MHz	824-894	890-960
Matte Black Silhouette	DB749BM36TC DB749BM36MUC	DB749BN36TC
Black Gold	DB749BGM36TC DB749BGM36MU	

DB726 DB739

SPECIAL PURPOSE MOBILE ANTENNAS UNITY or 3 dB GAIN, 806-960 MHz

DB726 Teardrop™

The DB726 Teardrop is designed for severe environments and provides an omnidirectional pattern in the 806-896 MHz frequency bands. Its low 1.5″ (38.1 mm) profile and 10.3″ (261.62 mm) maximum diameter give it an attractive shape that protects from overhead obstructions, car washes and vandals. Applications include conventional, trunked and cellular radios.

The Teardrop mounts on any flat surface and does not need a metal ground plane. This makes it ideal for fiberglass vehicles and boats as well as for cars, trucks, industrial vehicles and buildings.

The DB726 has unity gain and handles power inputs to 100 watts. It provides 64 MHz bandwidth with a VSWR of 2 to 1 or less. It mounts with sheet metal screws, and a neoprene gasket with adhesive on each side assures a watertight seal between the antenna and the mounting surface.

DB726 Teardrop™ Antenna

DB739 Series MAG-28 Antenna

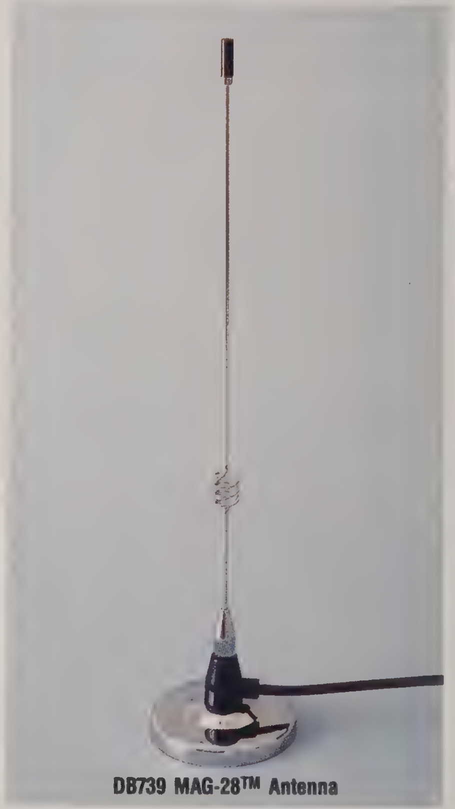
A special purpose antenna designed for temporary use with mobile or transportable radios, the MAG-28 provides 3 dB gain in the 821-960 MHz frequency bands. It handles power inputs to 50 watts and provides a broad bandwidth with a VSWR of 2 to 1. Applications include trunked and cellular radios.

The antenna has a magnetic mount that is only ¼″ (6.35 mm) thick, yet includes a magnet with a pull strength of 28 pounds (12.7 kg). The base is enclosed in a chrome plated housing and the coil spring whip is made of polished stainless steel.

Ordering Information

The DB726 Teardrop comes with 15′ (4.57 m) of AA3096 Coaxial Cable and a connector, plus gasket and mounting screws. Order DB726-L20 for 806-870 MHz or DB726-M20 for 824-896 MHz.

The DB739 MAG-28 comes with 10′ (3.05 m) of RG-58U cable, molded to the base, and a TNC Male factory attached connector. Order DB739-M07TC for 821-890 MHz or DB739-N07TC for 890-960 MHz.



DB739 MAG-28™ Antenna

Electrical Data

	DB726
Frequency Ranges — MHz	806-870, 824-896
Bandwidth — MHz	64
VSWR	2 to 1 or less
Maximum power input — watts	100
Polarization	Vertical
Horizontal pattern	Omnidirectional

Mechanical Data

	DB726
Radome material	ABS Resin
Radiator material	Brass, Copper
Ground plane material	Aluminum
Gasket material	Closed cell, Neoprene sponge
Height — in. (mm)	1.5 (38.1)
Diameter (maximum) — in. (mm)	10.3 (261.62)
Color	Decibel Tek Black™ (Other colors offered in large quantities)
Cable, connector — ft. (m)	15 (4.57) DB Low Loss AA3096, TNC, N
Shipping weight — lbs. (kg)	2 (.91)
Mounting — in. (mm)	Four sheet metal screws supplied. A .31 (.79) hole required for cable entrance.

Electrical Data

	DB739
Frequency Ranges — MHz	821-890, 890-960
Gain — dB	3.0
VSWR	2 to 1
Maximum power input — watts	50

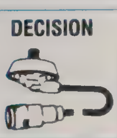
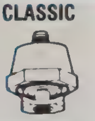
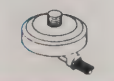
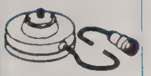
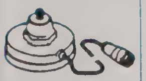
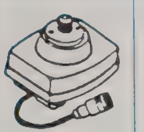
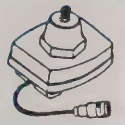
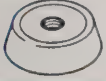
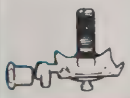
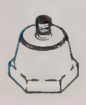
Mechanical Data

	DB739
Height — in. (mm)	13.625 (346.08)
Cable — ft. (m)	10 (3.05), RG-58U
Connector	TNC Male Crimp-on
Mount — in. (mm)	Magnetic, .25 (6.35) thick, 28 lbs. (12.7 kg) pull
Shipping weight — lbs. (kg)	3.375 (1.53)

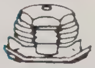
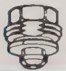
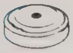
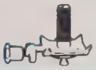
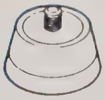
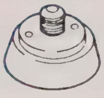
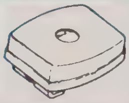
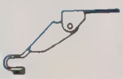
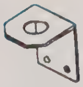
MOBILE ANTENNA PARTS AND ACCESSORIES, 30-960 MHz

DECIBEL

Complete Mounts

	Description	Frequency MHz	Order Number
DECISION 	Complete Roof Mount (.75″ [19.05 mm] Hole) Assembly with Stud, Cable and Connector (15′ [4.57 m] RG-58 with PL259 Connector)	50-512	11409
CLASSIC 	Complete Roof Mount (.75″ [19.05 mm] Hole) Less Cable (DB719)	30-36 36-42 42-50 50-870	11485 11486 11487 11488
BUTTON™ 	BUTTON Base and Mount (.75″ [19.05 mm] Hole) with 15′ (4.57 m) RG-58U Cable, No Connector	806-960	11550
	MAGNETIC MOUNT for DECISION Series Complete Assembly with Stud, Magnet Mount, Cable, and Connector (15′ [4.57 m] RG-58 with PL259 Connector)	50-512	11412
	MAGNETIC MOUNT for CLASSIC Series Complete Assembly with Base, Magnet Mount, Cable, and Connector (15′ [4.57 m] RG-58 with PL259 Connector)	30-36 36-42 42-50 50-900	11494 11495 11496 11497
	"NO HOLE" TRUNK LID MOUNT for DECISION Series Complete with Cable and Connector (15′ [4.57 m] RG-58 with PL259 Connector)	50-512	11415
	"NO HOLE" TRUNK LID MOUNT for CLASSIC Series Complete Assembly with Base, No Hole Mount, Cable, and Connector (15′ [4.57 m] RG-58 with PL259 Connector)	30-36 36-42 42-50 50-900	11490 11491 11492 11493
	Mount Piece Parts		
DECISION 	Base Nut Only	50-900	11403
DECISION 	Base Stud Mount Assembly Only (Shown)	50-900	11407
	Base Stud Mount Assembly (with cable)	50-900	11408
DECISION 	"0" Ring Kit Decision/Button Bases 6″ (152.4 mm) Large Decision Base Nut 6″ (152.4 mm) Small Decision Stud Kit of 12	50-900	11404
CLASSIC 	"0" Ring and Gasket Kit 12 Large "0" Rings 12 Gaskets for Classic Chrome Dome Kit of 24	30-900	11417
CLASSIC 	Chrome Dome Only (Includes "0" Ring)	30-36 36-42 42-50 132-900	11474 11475 11476 11477

Mount Piece Parts (Cont.)

	Description	Frequency MHz	Order Number
CLASSIC 	.75″ (19.05 mm) Hole Mount Insert	30-900	11465
CLASSIC 	.375″ (9.53 mm) Snap In Mount Assembly Only	30-512	11466
BUTTON 	Base Nut Only	806-960	11526
BUTTON 	Base Stud Mount Assembly Only	806-960	11551
	Mount Accessories		
	DECISION and CLASSIC Antenna Adaptor (Chrome) To Low Profile Mount (TAD, TAE, K-66, NMO)	50-870	11498
	DECISION and CLASSIC Adaptor To Low Profile Mount (TAD, TAE, K-66, NMO) (WHT) (BLK)	50-512 50-512	11483 11484
	"No Hole" Trunk Lid Mount (Less Cable and Mount)	30-512	11413
	Set Screw Assortment For Classic and Decision Series Kit of 12		11522
	12 Hole Plugs, .75″ (19.05 mm)		11521
	Stainless Steel Black Plated Adjustable Trunk Lip Mount .375″ (9.53 mm) .75″ (19.05 mm) In 800-960 MHz use only with antennas having built-in ground plane	30-960 30-960	11548 11549
	Stainless Steel Right Angle Trunk Groove Mount .75″ (19.05 mm) Hole for DECISION and CLASSIC In 800-960 MHz use only with antennas having built-in ground plane	30-960	11523
	Replacement Whips		
DECISION 	DB720-E Series (56″ [1,422.4 mm] Whip) (.125″ [3.18 mm) Dia.) DB700 Series Whip	132-174 132-512	11430 11540
	DB710 Series (22″ [558.8 mm] Whip) (.047″ [1.19 mm] unplated) 302 stainless	132-512	11400

MOBILE ANTENNA
PARTS AND ACCESSORIES Continued

Replacement Whips (Cont.)

Description		Frequency MHz	Order Number
CLASSIC	DB702, 712, 670 Series (.100″ [2.54 mm] Plated) (56″ [1,422.4 mm] Whip)	30-512	11450
	DB702, 712 Series (.125″ [3.18 mm] Plated) (56″ [1,422.4 mm] Whip)	30-512	11434
	DB675, DB 710 (.047″ [1.19 mm] Unplated) 302 Stainless	132-174	11400
DECISION	DB730G Series	406-420	11440
	DB730H Series	450-470	11441
	DB730J Series	470-488	11442
	DB730K Series	488-512	11443
CLASSIC	DB705G Series	406-420	11455
	DB705H Series	450-470	11460
	DB705J Series	470-488	11461
	DB705K Series	488-512	11462
DECISION AND BUTTON	DB732P Series	806-890	11552
	DB737P Series	806-870	11553
	DB738P Series	806-890	11553
	DB738BP Series	806-960	11557
	DB741P Series	806-960	11552
	DB741BP Series	806-960	11557

Replacement Coils

Description		Frequency MHz	Order Number
DECISION	DB720E Series	132-174	11436
	DB730G Series	406-420	11444
	DB730H, J, K Series	450-512	11445
CLASSIC	DB702E1 Series Spring Mount Coil	132-174	11457
CLASSIC	DB702E0 Series No Spring Coil (For .125″ [3.18 mm] Whip)	132-174	11458
CLASSIC	DB712A Series	30-36	11500
	DB712B Series	36-42	11501
	DB712C Series Spring Mount Coil	42-50	11502
CLASSIC	DB712A Series	30-36	11512
	DB712B Series	36-42	11513
	DB712C Series (No Spring Coil for .125″ [3.18 mm] Whip)	42-50	11514

Whip Adaptors

Description		Frequency MHz	Order Number
CLASSIC	DB702, DB712 Series Whip Nut (“0” Ring, Set Screw For .125″ [3.18 mm] Whip)	30-50 132-174	11416 11416
DECISION	DB710 Series Whip Nut (.046″ [1.17 mm] Whip)		11402
DECISION	DB720, 730, Series (.125″ [3.18 mm] Whip)		11401

Whip Adaptors (Cont.)

Description		Frequency MHz	Order Number
CLASSIC	DB675 Series Whip Nut (.046″ [1.17 mm] Whip)		11515
DECISION AND BUTTON	DB732, 737, 738, and 741 Series Whip Nut, Chrome	806-960	11555

Springs

Description		Frequency MHz	Order Number
	DB712A, B, C Series	30-50	11419
	DB718D Series	66-88	
	DB720E Series — DB702E Series	132-174	
	DB730G, H, J, K Series	406-512	
	DB705G Series	406-420	11463
	DB705H Series	450-470	
	DB705J Series	470-488	
	DB705K Series	488-512	

806-960 MHz Convenience Packs and Accessories

Description	Order Number
DB732, DB741, 1 ea. 3 dB Whip and Adaptor	11532
DB740, 25 ea. Quarter-wave Whip and Adaptor	11535
DB732, 1 ea. Lo-Pro™ Mount with Attached Cable	11536
25 ea. TNC Crimp-On Connectors	11537
25 ea. N-Male Crimp-On Connectors	11538
25 ea. Solderable N-Male Connectors	11539
DB741, 1 ea. Button™ Mount with Attached Cable	11550
DB738N, 1 ea. 3 dB Whip	11554
25 ea. Mini-UHF Crimp-On Connector	11556
DB732, DB737, DB741, 1 ea. 3 dB Whip and Adaptor (Black)	11557
DB741, 1 ea. Button™ Mount with Attached Cable (Black)	11558
DB737BG Black Gold™ Whip and Whip Adaptor	11560
DB741BG Black Gold™ Whip and Whip Adaptor	11561
25 ea. TNC Crimp-On Connectors for RG-58/U	11562
DB737B Black Whip and Whip Adaptor	11563
DB749B Black Whip Assembly (824-894 MHz)	11566
DB749B Black DBglas™ Exterior Coupling Unit	11567
DB749B Black DBglas™ Interior Coupling Unit	11568
DB749B Black DBglas™ Reinstall Kit	11569
DB749B Black Whip Assembly (890-960 MHz)	11570
DB749BGM Black Gold™ Whip and Adaptor	11571
DB749BG Black Gold™ Exterior Coupling Unit	11572

Note: All studs on Decibel Antennas are .313″ (7.95 mm) – 24 thread. All springs on Decibel Antennas have .125″ (3.18 mm) rod hole and a .313″ (7.95 mm) – 24 thread mounting hole.

Decibel engineers discuss Aeroglas' superior test results.

Aeroglas™ Radome—the Quest for Quality!

An independent laboratory tested an 8.5′ (2.16 m) antenna with an Aeroglas fiberglass radome that was 2.25″ (57.15 mm) OD at the base and 1.75″ (44.45 mm) OD at the top.

Four shocks were administered, each at a half sine wave of 20 Gs peak amplitude for 11 milliseconds in two orthogonal planes transverse to the vertical axis of the antenna.

The results: No mechanical damage and the antenna performed within VSWR specifications.

Next, the antenna was vibrated from 10 Hz to 30 Hz to 10 Hz with .015 amplitude for eight hours.

The results: No mechanical or electrical failure!

It is easy to see why Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts. It has amazing strength, yet is very lightweight.

Aeroglas has the kind of quality that Decibel continually searches for, and we have acquired **exclusive rights** to use it in our radomes.

The radomes are not made by extrusion or pull-trusion like some ordinary fiberglass. In making Aeroglas, a special process suspends the glass threads — not chopped fiber — uniformly throughout the radome. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect roundness for maximum mechanical strength. Our radomes withstand winds to 125 mph (200 km/hr) or more!

Aeroglas exemplifies Decibel's quest for creative ideas that make our products better than the competition.

If you want quality, you want Decibel base station antennas.

DB492, DB493 DB498 DIRECTIONAL YAGI ANTENNAS 806-960 MHz

DECIBEL

The DB492 and DB493 are light-duty, 806-866 MHz antennas that are excellent for control or point-to-point communications. They are also well suited for temporary or portable use.

The DB498 for 806-866, 824-896 and 896-960 MHz is a heavy-duty antenna for permanent installation. All aluminum parts are gold anodized and a radome covers the radiator to prevent corrosion and ice build-up. It will withstand winds to 150 mph (241 km/hr).

Design and Construction

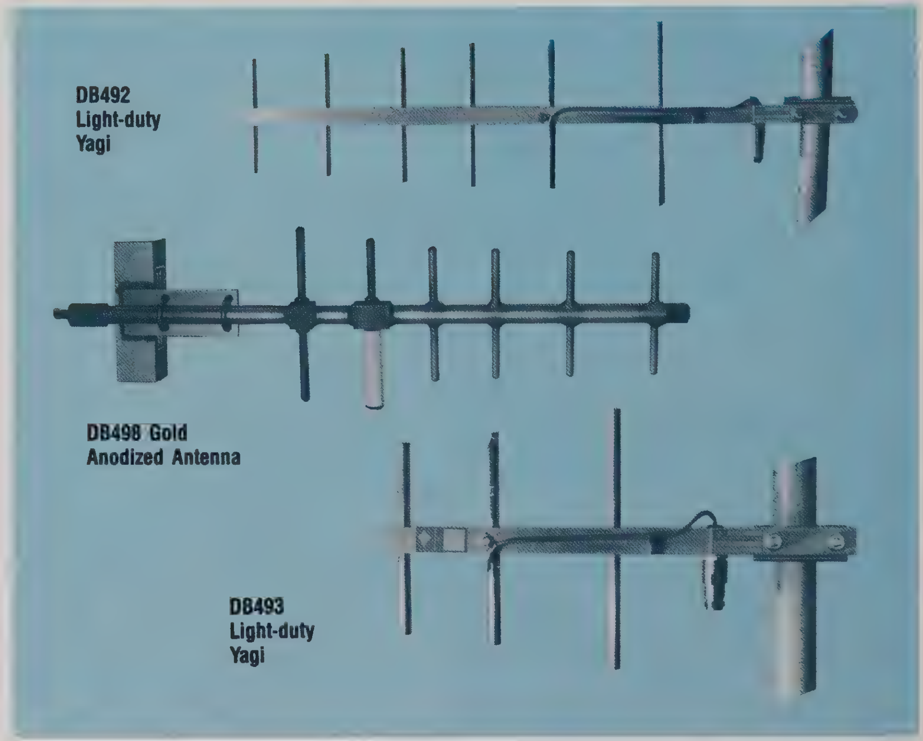
All components used in the support boom and elements are made of high strength aluminum alloys, with mounting bracket and hardware components of galvanized or stainless steel.

A unique mounting arrangement permits rapid azimuth orientation.

Each antenna is assembled and checked for minimum VSWR at the factory. No field pruning or adjustment is required.

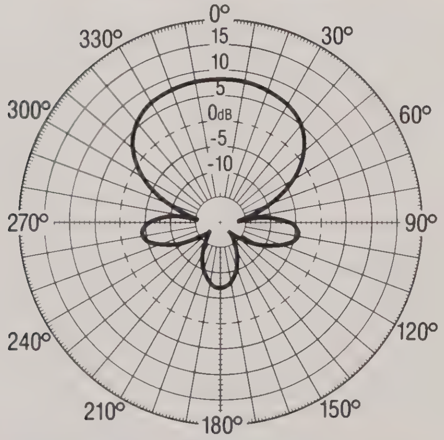
Ordering Information

Please specify exact frequency or range. Order DB492 8 dB gain or DB493 6 dB gain for light-duty. Order DB498 9 dB gain heavy-duty for permanent installations. Dual model DB498-2 is also available. Mounting clamps are included.

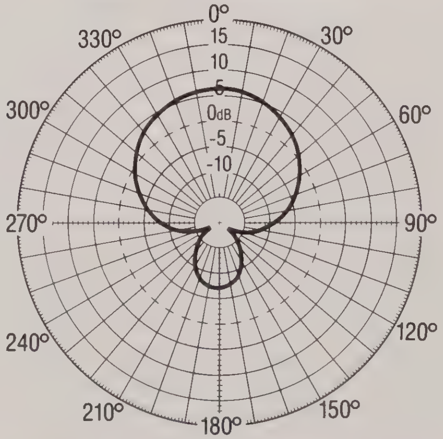


CAN BE SHIPPED UPS.

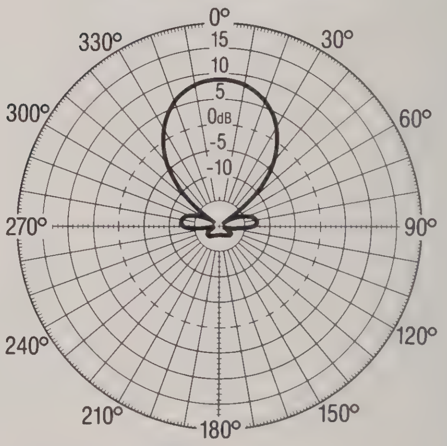
DB492 8 dB Gain, Horizontal



DB493 6 dB Gain, Horizontal



DB498 9 dB Gain, Horizontal



Electrical Data

Frequency Ranges — MHz	
DB492, DB493	A = 806-866, K = 920-960
DB498	A = 806-866, C = 824-895, K = 896-960
Bandwidth — MHz	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	
DB492	8
DB493	6
DB498	9
Polarization	Vertical
Maximum power input — watts	100
Lightning protection	Direct ground
Standard Termination	Captive Type N-Female

Mechanical Data

Materials:	
Support boom	Aluminum
Elements	Aluminum
Mounting brackets	Galvanized steel
Dimensions (H×L) — in. (mm)	
DB492	7.5 (190.5)×25.5 (647.7)
DB493	7.5 (190.5)×13 (330.2)
DB498	7.5 (190.5)×25.5 (647.7)
Net weight — lbs. (kg)	
DB492	3.5 (1.59)
DB493	.7 (.32)
DB498	5 (2.27)
Shipping weight — lbs. (kg)	
DB492	6 (2.72)
DB493	3 (1.36)
DB498	8 (3.63)

DB495 CORNER REFLECTOR ANTENNA 9 dBd GAIN, 806-935 MHz

With a solid metal reflector, the DB495 is an exceptionally strong antenna that provides 9 dBd forward gain, a front to back ratio of 25 dB, and a 64 or 65 MHz bandwidth in the 806-935 MHz range.

It mounts to the top or side of a tower, and no field adjustment is required.

For additional gain, two antennas can be stacked for 12 dBd gain, four antennas for 15 dBd gain. Coverage can be broadened by fanning the antennas apart; however, forward gain will be reduced somewhat.

If desired, the DB495-2 antennas can be mounted on opposite sides of a tower for a bidirectional pattern with a 9 dBd gain in each direction. Contact the factory for details.

Design and Construction

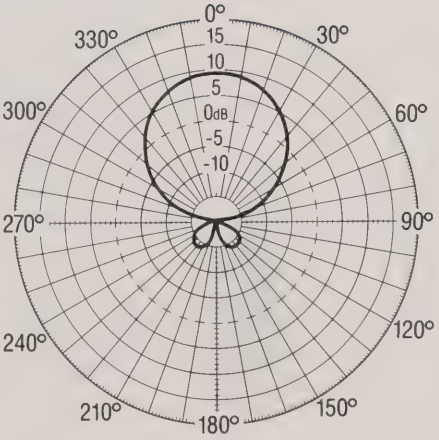
The DB495 is made of high-strength aluminum alloys, the mounting hardware of stainless steel. The radiating element is a uniquely designed center fed dipole that gives maximum protection from moisture.

With its broad bandwidth, the antenna gives optimum performance in single or multi-frequency systems.

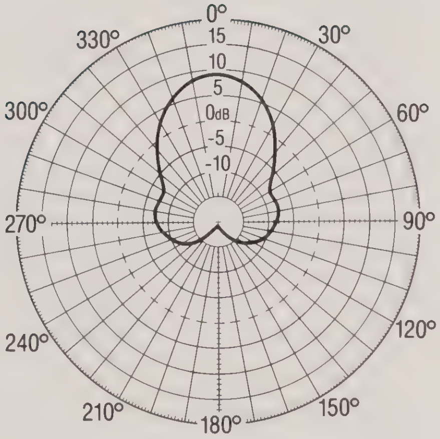
Ordering Information

Please specify exact frequency or range (and termination if non-standard). Order DB495 for 9 dBd gain, DB495-2 for a 2-antenna array with 12 dBd gain, or DB495-4 (special) for a 4-antenna array with 15 dBd gain. Mounting brackets and hardware are included.

DB495 Corner Reflector Antenna



DB495 Vertical (elevation) radiation pattern



DB495 Horizontal (azimuth) radiation pattern

Mechanical Data

Materials:	
Reflector support booms (aluminum) — in. (mm)	1 (25.4) OD with .083 (2.108) wall
Reflector	Aluminum
Radiating element boom (aluminum) — in. (mm)	1 (25.4) diameter with .083 (2.108) wall
Radiating element	Aluminum
Mounting bracket	Aluminum
Mounting clamps	Stainless steel V-bolts
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	2.35 (.218)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	95 (43.09)
Wind rating:	
Survival without ice — mph (km/hr)	100 (161)
Survival with 1.5″ (38.1 mm) radial ice — mph (km/hr)	85 (137)
Dimensions:	
Height — in. (mm)	24 (609.6)
Maximum width — in. (mm)	14 (355.6)
Maximum depth (front to back) — in. (mm)	14 (355.6)
Net weight — lbs. (kg)	12 (5.44)
Shipping weight — lbs. (kg)	18 (8.16)

Electrical Data

Frequency Ranges — MHz	806-870, 870-935
Bandwidth — MHz	same as above
Nominal impedance — ohms	50
VSWR	1.5 to 1 or less
Forward gain (over half-wave dipole) — dB	9
Polarization	Vertical
Maximum power input — watts	150
Azimuth beamwidth of single DB495 (half power)	40°
Elevation beamwidth of single DB495 (half power)	60°
Front to back ratio — dB	25
Lightning protection	Direct ground

Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.

DB496 CYLINDRICAL PARABOLIC ANTENNA 11.4 dBd GAIN, 942-960 MHz

DECIBEL

A vertically polarized antenna, the DB496 provides 11.4 dBd gain and an 18 MHz bandwidth to cover the 942-960 MHz range. It meets or exceeds FCC requirements for beamwidth and minor lobe degradation.

The DB496 mounts to the top or side of a tower. Especially rugged, it will survive winds to 125 mph (201 km/hr) and it is weatherproof.

Two of these antennas can be stacked for a gain of 14 dBd.

Design and Construction

A double dipole directional radiator is enclosed by an ABS radome, which minimizes changes in VSWR, even under severe icing. The unique design of the feed gives maximum protection from moisture.

The frame of the cylindrical parabolic reflector is made of high strength aluminum alloys, the screen of expanded flat metal, and contact points between frame and screen are riveted for maximum strength. Mounting hardware is made of stainless steel.

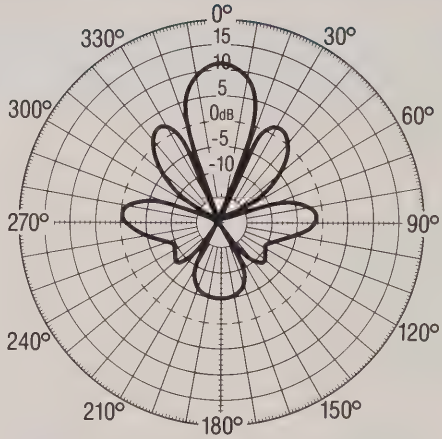
Gain and VSWR are essentially flat across the bandwidth, which assures optimum performance for the antenna in single or multi-frequency systems.

Ordering Information

Please specify frequency or range (and termination if non-standard). Order DB496 for 11.4 dBd gain or DB496-2 for a 2-antenna array with 14 dBd gain. Included are V-bolts and straps to fit round members up to 3″ (76.2 mm) OD, angle members to 2″ (50.8 mm). Other size clamps can be specially ordered.

CAN BE SHIPPED UPS.

DB496 Cylindrical Parabolic Antenna



Horizontal radiation pattern of DB496 (vertical polarization) showing power gain with respect to an isotropic radiator (0 dB level).

Electrical Data

Frequency Range — MHz	942-960
Bandwidth — MHz	18
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain	
Over isotropic — dBi	13.5
Over half-wave dipole — dBd	11.4
Polarization	Vertical
Maximum power input — watts	100
Vertical beamwidth (half power)	44°
Horizontal beamwidth (half power)	19°
Minor lobe levels (minimum) — dB	–15
Front to back ratio — dB	20
Lightning protection	Direct ground
Standard Termination: Captive Type N-Male attached to end of flexible lead. Other fittings are available on special order.	

Mechanical Data

Materials:	
Radome	Molded ABS resin
Reflector frame (aluminum) — in. (mm)	.625 (15.88) & .75 (19.05) dia. with .058 (1.47) wall
Reflector screen	expanded flattened, sheet aluminum
Radiating element (aluminum) — in. (mm)	.375 (9.53) solid rod
Radiating element boom (aluminum) — in. (mm)	1 (25.4) dia. with .083 (2.11) wall
Mounting bracket (aluminum)	Welded
Mounting clamps	Stainless steel V-bolts with galvanized cross straps
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.30 (.121)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	52 (23.59)
Wind rating:	
Survival without ice — mph (km/hr)	125 (201)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	85 (137)
Dimensions:	
Height — in. (mm)	13.5 (342.9)
Maximum width — in. (mm)	42 (1,066.8)
Maximum depth (front to back) — in. (mm)	17 (431.8)
Net weight — lbs. (kg)	9 (4.08)
Shipping weight — lbs. (kg)	18 (8.16)

DB499 DIRECTIONAL YAGI ANTENNA, 10 dB GAIN, 20 dB FRONT TO BACK RATIO, 806-960 MHz

DECIBEL

A heavy-duty, lightweight Yagi, the DB499 antenna gives highly directional coverage and has a front-to-back ratio of 20 dB. It provides 10 dB gain in the 806-866, 824-896 and 896-960 MHz frequency bands.

A unique mounting arrangement permits either vertical or horizontal polarization as well as rapid azimuth orientation.

Design and Construction

The DB499 is made of high strength welded aluminum alloys protected by a gold anodized finish. Mounting brackets and hardware components are made of galvanized or stainless steel. A fixed type N-Female connector is mounted in the support boom.

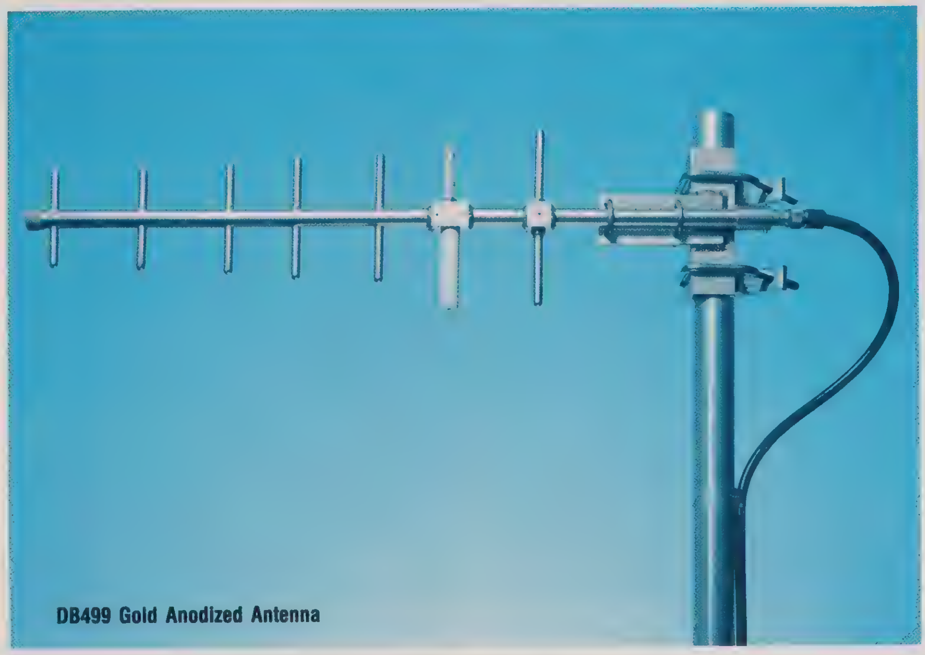
The unique design of the enclosed feed assures maximum protection from moisture. A radome covers the radiator to prevent corrosion and ice build-up.

The antenna is factory assembled and tested for minimum VSWR over a wide band of frequencies. No field tuning or adjustment is required. Precision welding of director and reflector elements prevents misalignment during shipment and installation.

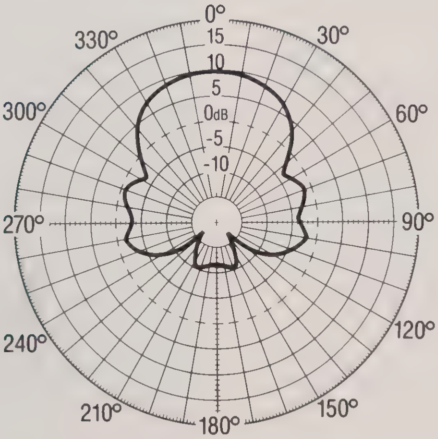
Ordering Information

Please specify exact frequency or range. V-bolts and straps are included to fit round members to 3″ (76.2 mm) OD, angle members to 2″ (50.8 mm). Other size clamps can be special ordered.

CAN BE SHIPPED UPS.


DB499 Gold Anodized Antenna

DB499 Horizontal Pattern, Vertical Polarization



Electrical Data

Frequency Ranges — MHz	A = 806-866, C = 824-896, K = 896-960
Bandwidth	Same as above
VSWR	1.5 to 1 or less
Nominal impedance — ohms	50
Forward gain (over half-wave dipole) — dB	10
Polarization	Vertical or horizontal
Maximum power input — watts	100
Vertical beamwidth (half power point)	30°
Horizontal beamwidth (half power point)	60°
Front-to-back ratio — dB	20
Lightning protection	Direct ground
Standard Termination: Captive Type N-Female.	

Mechanical Data

Materials:	
Support boom (aluminum) — in. (mm)	.75 (19.05) OD with .083 (2.11) wall
Elements	Aluminum
Mounting brackets	Galvanized steel
Mounting clamps	Stainless steel V-bolts
Maximum exposed area (flat plate equivalent) — ft² (m²)	0.25 (.023)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	10 (4.54)
Wind rating:	
Survival without ice — mph (km/hr)	150 (242)
Survival with .5″ (12.7 mm) radial ice — mph (km/hr)	100 (161)
Dimensions (H×L) — in. (mm)	6 (152.4)×30 (762)
Net weight — lbs. (kg)	5 (2.27)
Shipping weight — lbs. (kg)	8 (3.63)

DB580 OMNIDIRECTIONAL ANTENNA UNITY GAIN, 806-960 MHz

DECIBEL

The DB580 is an omnidirectional unity gain antenna for 800-900 MHz conventional, trunking, paging and cellular radiotelephone site installations. Available in two broad frequency ranges (see table, below), the DB580 uses Decibel's Horizon Blue™ Mirage™ 1.5″ (3.81 mm) extruded fiberglass radome.

A fiberglass extrusion process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB580 mounts to platforms, towers and structures via a gold iridited mounting ring made of aluminum alloy. Mounting clamp and hardware are provided.

A unique dipole radiator feed provides steady beam position and good VSWR across a broad frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

For moisture protection, the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

Ordering Information

Order DB580 with unity gain. Please specify exact frequency or frequency range. One half of a DB365 Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD and angle members up to 2.5″ (63.5 mm) on a side.

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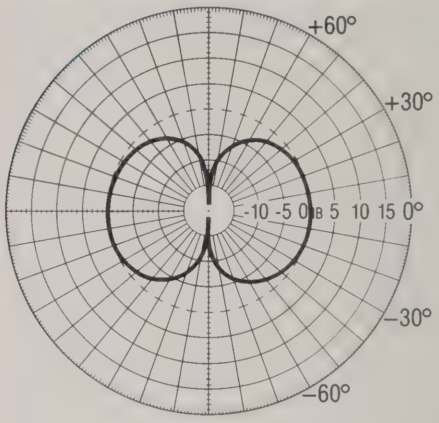
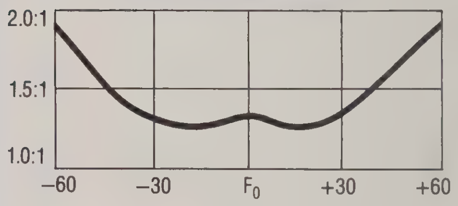
CAN BE SHIPPED UPS.

DB580 Omnidirectional Antenna

DB580 Typical Vertical Radiation Pattern



VSWR vs. Frequency-MHz



Electrical Data

Frequency Ranges — MHz	H = 806-896, K = 849-960
Bandwidth — MHz	up to 109
Gain — dB	0.0
Beamwidth "E" Plane (half power)	100°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	550
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	5.25 (2.38)
Length:	
Overall — ft. (m)	1.79 (.55)
Radome — ft. (m)	1.6 (.50)
Mounting pipe — in. (mm)	1.75 (44.45)
Maximum exposed area (flat plate equivalent) — ft² (m²)	.20 (.02)
Net weight — lbs. (kg)	3.8 (1.71)
Shipping weight — lbs. (kg)	6.0 (2.70)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support Mounting Ring	6061-T6 Aluminum
Clamp	Galvanized steel

DB553 OMNIDIRECTIONAL ANTENNA
3.5 dBd GAIN, 806-960 MHz

The DB553 is an omnidirectional 3.5 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations. Available in seven frequency ranges (see table, below), the DB553 uses Decibel's new DB Horizon Blue™ Aeroglas™ fiberglass radome.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB553 mounts to platforms, towers and structures via a 21″ (533.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

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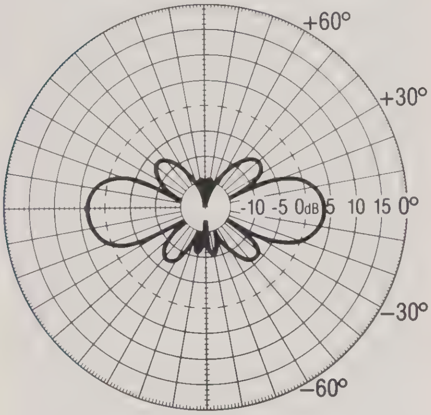
DB553 Omnidirectional Antenna

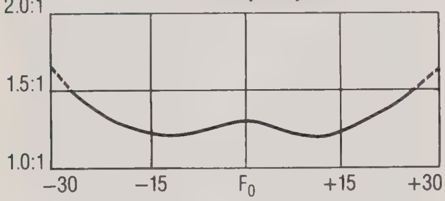
Ordering Information

Order DB553 with 3.5 dBd gain. Please specify exact frequency or frequency range. DB370 Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD and angle members up to 2.5″ (63.5 mm) on a side.

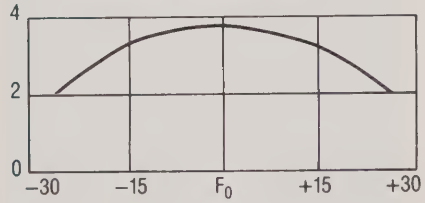
DB553 Typical Vertical Radiation Pattern



VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz



Electrical Data

Frequency Ranges — MHz	H = 806-824, J = 824-849, K = 849-870, L = 869-894, M = 890-905, N = 935-960, G = 928-932
Bandwidth — MHz	25
Gain — dB	3.5
Beamwidth "E" Plane (half power)	28°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	550
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
HELIAX® jumper	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts.

Mechanical Data

Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	31 (14.06)
Length:	
Overall — ft. (m)	5.75 (1.75)
Radome — ft. (m)	4 (1.22)
Mounting pipe — in. (mm)	21 (533.4)
Maximum exposed area (flat plate equivalent) — ft² (m²)	.70 (.065)
Net weight — lbs. (kg)	18 (8.16)
Shipping weight — lbs. (kg)	24 (10.89)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel

DB557 OMNIDIRECTIONAL ANTENNA 7.5 dBd GAIN, 806-960 MHz

DB557 Omnidirectional Antenna

The DB557 is an omnidirectional 7.5 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations. Available in seven frequency ranges (see table, below), the DB557 uses Decibel's new DB Horizon Blue™ Aeroglas™ fiberglass radome.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB557 mounts to platforms, towers and structures via a 21" (533.4 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

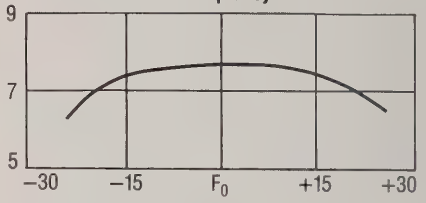
For lightning protection, a large diameter conductor extends from top to bottom to provide ground to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

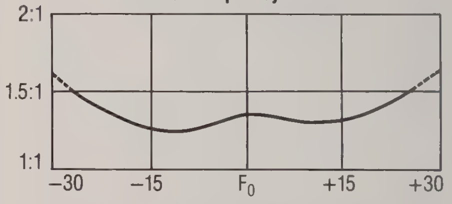
Ordering Information

Order DB557 with 7.5 dBd gain. Please specify exact frequency or frequency range. DB370 Mounting Clamp Set is included to fit round members up to 2.25" (57.15 mm) OD and angle members up to 2.5" (63.5 mm) on a side.

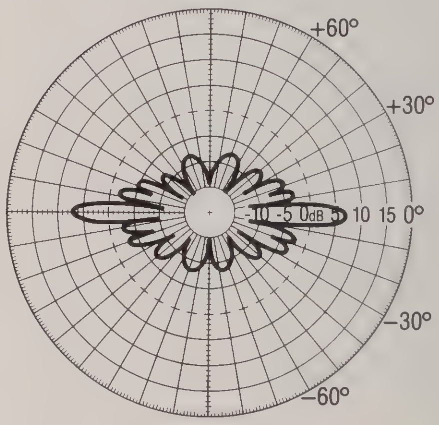
Gain-dB vs. Frequency-MHz



VSWR vs. Frequency-MHz



DB557 Typical Vertical Radiation Pattern



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Electrical Data	
Frequency Ranges — MHz	H = 806-824, J = 824-849, K = 849-870, L = 869-894, M = 890-905, N = 935-960, G = 928-932
Bandwidth — MHz	25
Gain — dB	7.5
Beamwidth "E" Plane (half power)	9°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	550
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (Fixed)
HELIAX® jumper	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts.

Mechanical Data	
Length:	
Overall — ft. (m)	9.75 (2.97)
Radome — ft. (m)	8 (2.44)
Mounting pipe — in. (mm)	21 (533.4)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	27 (12.25)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel
Net weight — lbs. (kg)	26 (11.79)
Shipping weight — lbs. (kg)	33 (14.97)

DB559 OMNIDIRECTIONAL ANTENNA 9 dBd GAIN, 806-960 MHz

DB559 Omnidirectional Antenna

The DB559 is an omnidirectional 9 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations.

Available in seven frequency ranges (see table, below), the DB559 uses Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue™ Aeroglas™ fiberglass radome.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB559 mounts to platforms, towers and structures via a 27″ (685.8 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

A unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For lightning protection, a large diameter conductor extends from top to bottom of each antenna to provide ground to the tower.

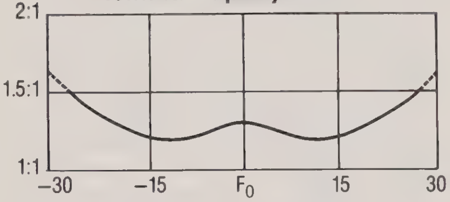
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. A drain plug at the top of the antenna can be removed for condensation to drain or evaporate.

The DB559 is also available with electrical downtilt of 3° ±1°, 6° ±1°, or 10° ±1.5°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 8 dB (main lobe). Gain on the horizon is 5 ±1 dB, −2 ±2 dB, or −7 ±3 dB, respectively. For other specifications and for uptilt (inverted downtilt for Rx) models, consult Systems Engineering.

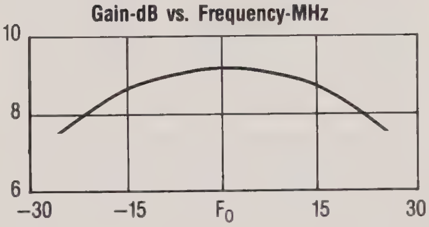
Ordering Information

Please specify exact frequency or frequency range and beamtilt, if required. DB370 Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD and angle members up to 2.5″ (63.5 mm). For downtilt order DB559T3 for 3°, DB559T6 for 6° and DB559T10 for 10° downtilt.

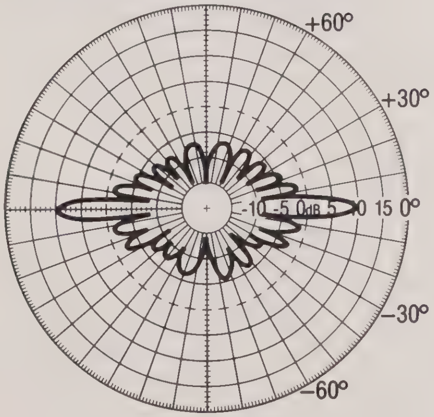
VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz



DB559 Typical Vertical Radiation Pattern



HELIAX is a registered trademark of Andrew Corporation

Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	9
Across 55 MHz	8.5 ± 1
Beamwidth "E" Plane (half power)	6° ±.5°
Beamwidth "H" Plane (half power)	Omni
Maximum power — watts	550
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts.

Mechanical Data

Materials:	
Radome	Aeroglass™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized Steel
Length:	
Overall — ft. (m)	13.5 (4.11)
Radome — ft. (m)	11 (3.35)
Mounting pipe — in. (mm)	27 (685.8)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	37 (16.78)
Net weight — lbs. (kg)	28 (12.7)
Shipping weight — lbs. (kg)	35 (15.88)

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DB560 OMNIDIRECTIONAL ANTENNA 10 dBd GAIN, 806-960 MHz

The DB560 is an omnidirectional 10 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations.

Available in seven frequency ranges (see table, below), the DB560 uses Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue™ Aeroglas™ fiberglass radome.

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

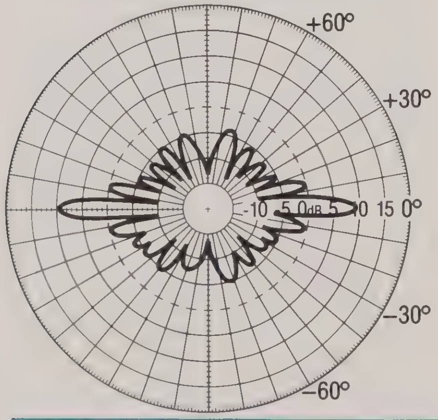
Other Features

The DB560 mounts to platforms, towers and structures via a 24″ (609.6 mm) weather-proof, gold iridited support pipe made of aluminum alloy.

A unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

Typical Vertical Radiation Pattern



For lightning protection, a large diameter conductor extends from top to bottom of each antenna to provide ground to the tower.

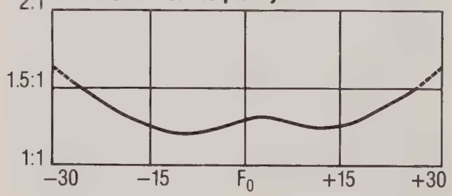
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

The DB560 is also available with electrical downtilt of 3° ±1°, 6° ±1°, or 10° ±1.5°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 9 dB (main lobe). Gain on the horizon is 5 ±1 dB, –2 ±2 dB, or –7 ±3 dB, respectively. For other specifications consult Decibel Systems Engineering.

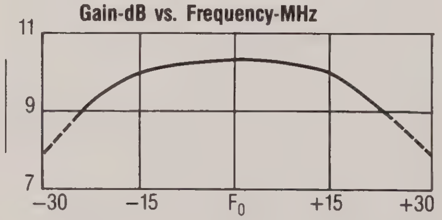
Ordering Information

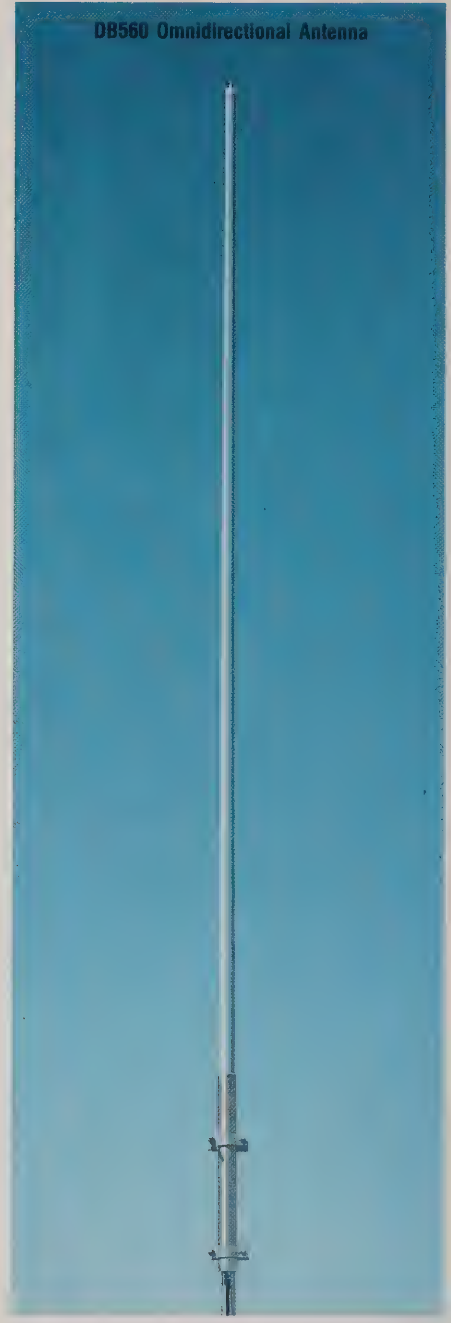
Order DB560 with 10 dBd gain. Please specify exact frequency or frequency range. For downtilt, order DB560T3 for 3°, DB560T6 for 6° and DB560T10 for 10° downtilt. DB370 Mounting Clamp Set is included to fit round members up to 2.25″ (57.15 mm) OD and angle members up to 2.5″ (63.5 mm) on a side.

VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz





HELIAX is a registered trademark of Andrew Corporation

Electrical Data	
Frequency Ranges — Model/MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	10
Across 55 MHz	9.5 ± 1
Beamwidth "E" Plane (half power)	4.5°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	550
VSWR across 55 MHz	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Note: In 928-952 MHz use -Q Suffix for 1000 watts.

Mechanical Data	
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	55 (24.95)
Length:	
Overall — ft. (m)	16.12 (4.91)
Radome — ft. (m)	14 (4.27)
Mounting pipe — in. (mm)	24 (609.6)
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.66 (.154)
Net weight — lbs. (kg)	32 (14.51)
Shipping weight — lbs. (kg)*	55 (24.95)
Materials:	
Radome	Aeroglas™ Fiberglass
Radiators	Brass
Support pipe	6061-T6 Aluminum
Clamps	Galvanized steel

*Mounting Clamps shipped separately.

DB563, DB562 135°, 150° and 170° DIRECTIONAL ANTENNAS
DB561 13, 12 and 11 dB GAIN, 806-952 MHz

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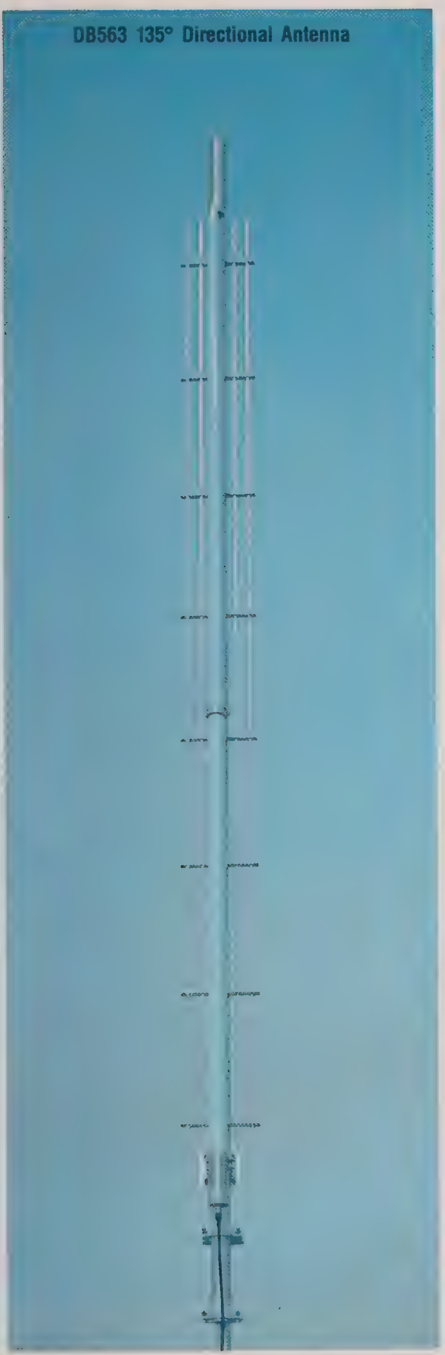

The DB563, 562 and 561 are variations of the DB564 antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations. The DB563 has a 135 degree pattern with 13 dB gain. The DB562 is 150 degree and 12 dB gain. The DB561 is 170 degree and 11 dB gain. Available in seven frequency ranges (see table, below), the antennas use Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue™ Aeroglas™ fiberglass radome. The antenna uses a flat all-aluminum backscreen with solid vertical rods. The DB563 has four rods; the DB562 two rods and the DB561, the "back-bone" mast only.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB564's unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. This feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

Ordering Information

Please specify frequency or range. Order DB563, DB562 or DB561 antenna. DB371 Mounting Kit is included.

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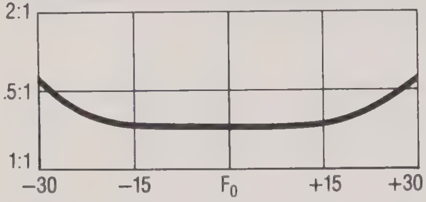
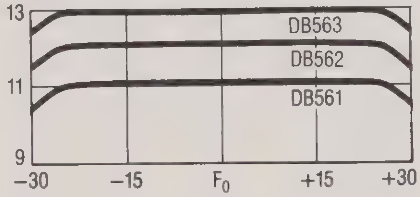
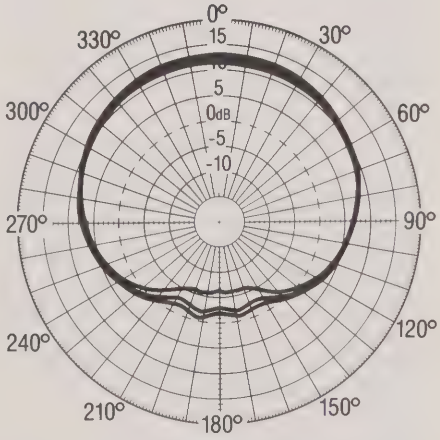
Typical VSWR vs. Frequency-MHz



Typical Gain-dB vs. Frequency-MHz





Horizontal pattern

Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932		
VSWR over 55 MHz Range			1.5 to 1 or better
Nominal impedance — ohms			50
	DB563	DB562	DB561
Bandwidth/Gain (minimum) — dB Across 55 MHz	13	12	11
Front to back ratio — dB	19	15	12
Beamwidth "E" Plane (half power)	6°±.5°	6°±.5°	6±.5°
Beamwidth "H" Plane (half power)	135°±5°	150°±5°	170°±5°
Maximum power input — watts			550
Lightning protection			Direct ground
Termination			N-Female (fixed)
HELIAX® jumper			N-Male/N-Male

Note: Specify Q suffix for 1000 watt models.

Mechanical Data

Materials:			
Radome			Aeroglas™
Radiating elements			Brass
Backscreen (aluminum)			6061-T6
Mounting clamps			DB371
Overall length — in. (mm)			161 (4,089.4)
Radome length — in. (mm)			128 (3,251.2)
	DB563	DB562	DB561
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	3.52 (.328)	3.41 (.317)	2.87 (.267)
Rated wind velocity — mph (km/hr)	140 (225)	150 (241)	150 (241)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	127 (58)	123 (56)	104 (47)
Backscreen — in. (mm)			
Width	10 (254)	7 (178)	2.38 (60)
Length	127 (3,225.8)	127 (3,225.8)	127 (3,225.8)
Net weight — lbs. (kg)	36 (16.33)	30 (13.61)	28 (12.70)
Shipping weight — lbs. (kg)	86 (39.00)	80 (36.29)	78 (35.38)

DB563S10

135° DIRECTIONAL ANTENNA 10.5 dBd GAIN, 824-894 MHz

Two models are offered, the DB563S10-J for cellular receive in the 824-849 MHz band, and DB563S10-L for cellular transmit in the 869-894 MHz band.

The antenna is a 7.5 dB gain omnidirectional, but becomes a 10.5 dB directional when mounted on a full length, aluminum-welded-to-aluminum backscreen of solid vertical rods.

The DB563S10 uses Decibel's new Aeroglas™ fiberglass radome in DB Horizon Blue™ color.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulter's poles and racing sailboat masts because of its strength and light weight. Now Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricated process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection as well as perfect roundness for maximum mechanical strength.

Other Features

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal cells" and minimizes intermodulation within the antenna.

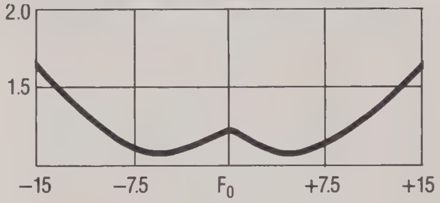
For lightning protection, a large diameter conductor extends from top to bottom, adjacent to the radiators and insulators to provide grounding to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector, and a drain plug at the top of the antenna can be removed so that condensation can evaporate.

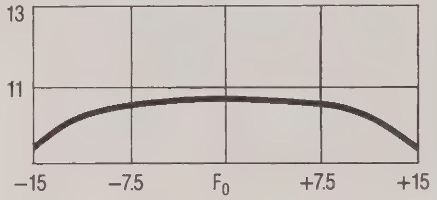
Ordering Information

Please specify frequency or range. Order DB563S10-J for cellular receive and DB563S10-L for transmit. DB371 Galvanized Steel Mounting Kit is included.

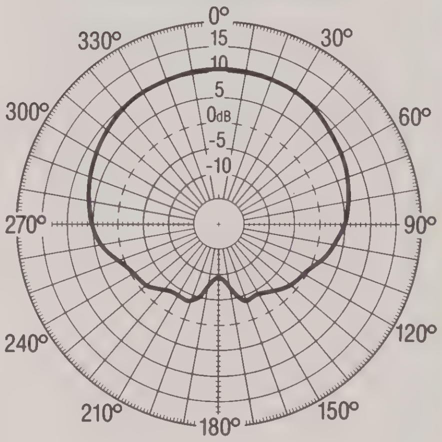
VSWR vs. Frequency-MHz

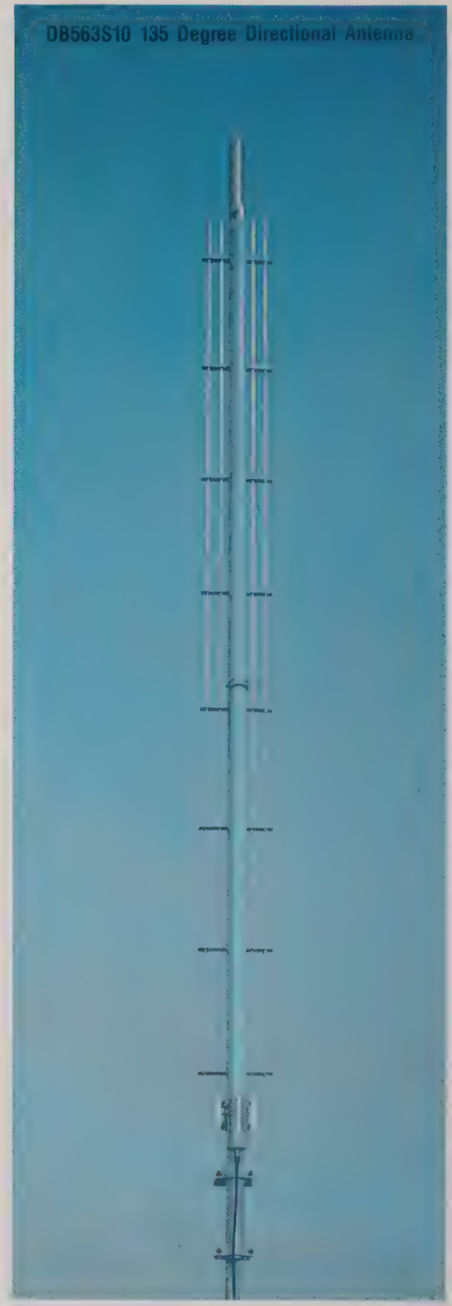


Gain-dB vs. Frequency-MHz



DB563S10 Horizontal Pattern





HELIAX is a registered trademark of Andrew Corp.

Electrical Data

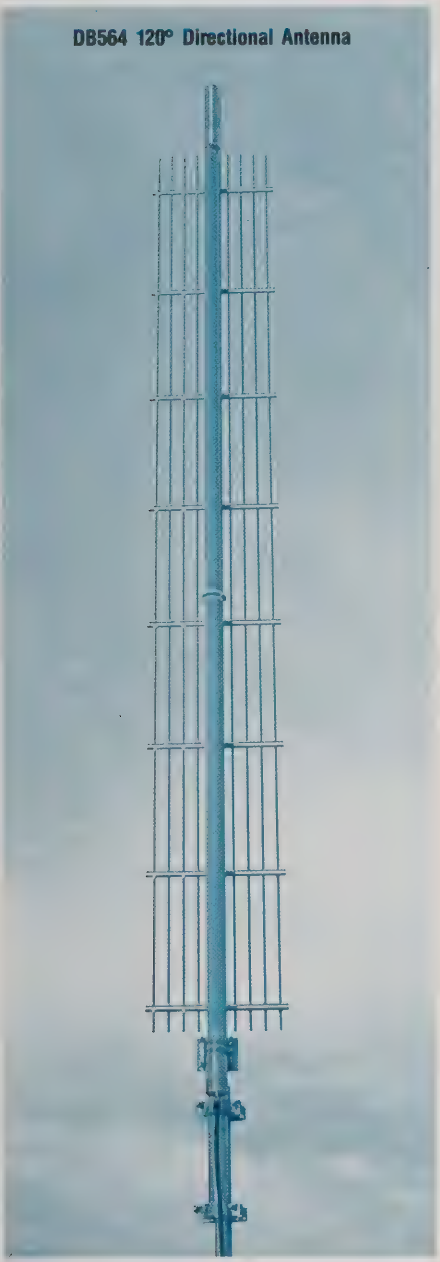
Frequency Ranges — MHz	J = 824-849, L = 869-894
Bandwidth — MHz	25
Gain — dBd	10.5±.5
Front to back ratio — dB	20
Beamwidth "E" Plane (half power)	9°±.5°
Beamwidth "H" Plane (half power)	135°±5°
Maximum power — watts	550
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Dimensions:	
Overall length — ft. (m)	10.41 (3.18)
Radome length — ft. (m)	6.67 (2.03)
Backscreen	
Width — ft. (m)	.8 (.25)
Length — ft. (m)	7.5 (2.29)
Radiating elements	Brass
Radome material	Aeroglas™ Fiberglass
Backscreen materials	6061-T6 Aluminum
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	2.75 (.256)
Rated wind velocity — mph (km/hr)	100 (161)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	99 (45)
Mounting hardware	DB371 Clamp Set
Net weight — lbs. (kg)	29 (13.15)
Shipping weight — lbs. (kg)	79 (35.83)

DB564 120° DIRECTIONAL ANTENNA 14 dB GAIN, 806-952 MHz

DECIBEL



DB564 120° Directional Antenna

The DB564 is a 120° directional 14 dB gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations. Available in seven frequency ranges (see table, below), the DB564 uses Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue Aeroglas™ fiberglass radome. The antenna uses a flat all-aluminum backscreen with solid vertical rods.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other Features

The DB564's unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. This feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

The DB564 is also available with electrical downtilt of 3° ±1°, 6° ±1°, or 10° ±1.5°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 13 dB (main lobe). Gain on the horizon is 10 ±1 dB, 3 ±2 dB, or −2 ±3 dB, respectively. For other specifications consult Systems Engineering.

Ordering Information

Please specify frequency or range and beamtilt, if any. Order DB564-A for cellular receive and DB564-B for transmit. For downtilt order DB564T3 for 3°, DB564T6 for 6° and DB564T10 for 10° downtilt. DB371 Mounting Kit is included.

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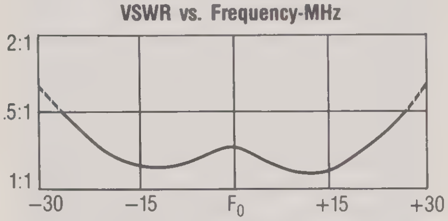
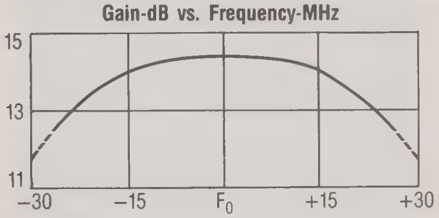
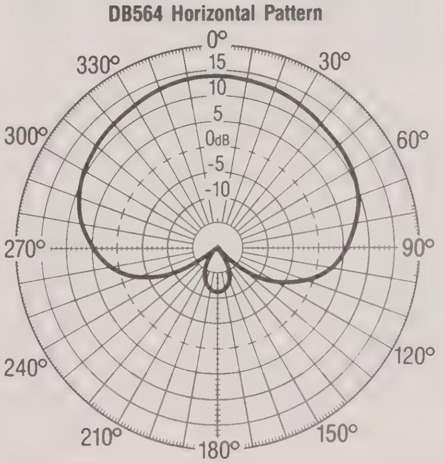


VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz



DB564 Horizontal Pattern

Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
VSWR over 55 MHz Range	1.5 to 1 or better
Nominal impedance — ohms	50
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	14
Across 55 MHz	13.5 ± 1
Front to back ratio — dB	20 or better
Beamwidth "E" Plane (half power)	6°±.5°
Beamwidth "H" Plane (half power)	120°±5°
Maximum power input — watts	550
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts.

Mechanical Data

Materials:	
Radome	Aeroglas™
Radiating elements	Brass
Backscreen (aluminum)	6061-T6
Mounting clamps	DB371
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	4.1 (.38)
Rated wind velocity — mph (km/hr)	100 (161)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	165 (74.84)
Overall length — in. (mm)	161 (4,089.4)
Radome length — in. (mm)	128 (3,251.2)
Backscreen — in. (mm)	
Width	16 (406.4)
Length	127 (3,225.8)
Net weight — lbs. (kg)	40 (18.14)
Shipping weight — lbs. (kg)	90 (40.82)

DB564S12

120° DIRECTIONAL ANTENNA
12 dBd GAIN, 824-894 MHz

Two models are offered, the DB564S12-J for cellular receive in the 824-849 MHz, and DB564S12-L for cellular transmit in the 869-894 MHz band.

The antenna is a 7.5 dB gain omnidirectional, but becomes a 12 dB directional when mounted on a full length, aluminum welded to aluminum backscreen, which has solid vertical rods and is longer than competitors'.

The DB564S12 uses Decibels' collinear design enclosed in our new Aeroglas^{TM} fiberglass radome in DB Horizon Blue^{TM} color.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulter's poles and racing sailboat masts because of its strength and light weight. Now Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricated process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection as well as perfect roundness for maximum mechanical strength.

Other Features

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal cells" and minimizes intermodulation within the antenna.

For lightning protection, a large diameter conductor extends from top to bottom, adjacent to the radiators and insulators to provide grounding to the tower.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector, and a drain plug at the top of the antenna can be removed so that condensation can evaporate.

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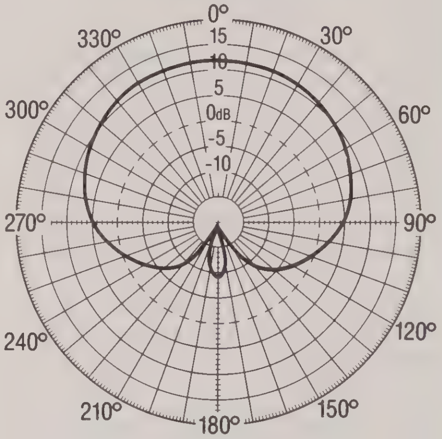
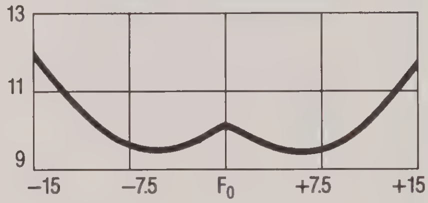
Ordering Information

Please specify frequency or range. Order DB564S12-J for cellular receive and DB564S12-L for transmit. DB370 Mounting Kit is included.

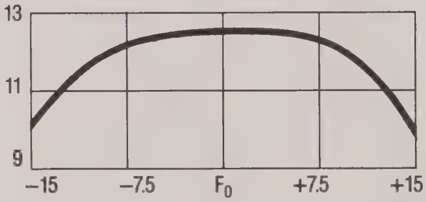
DB564S12 Horizontal Pattern

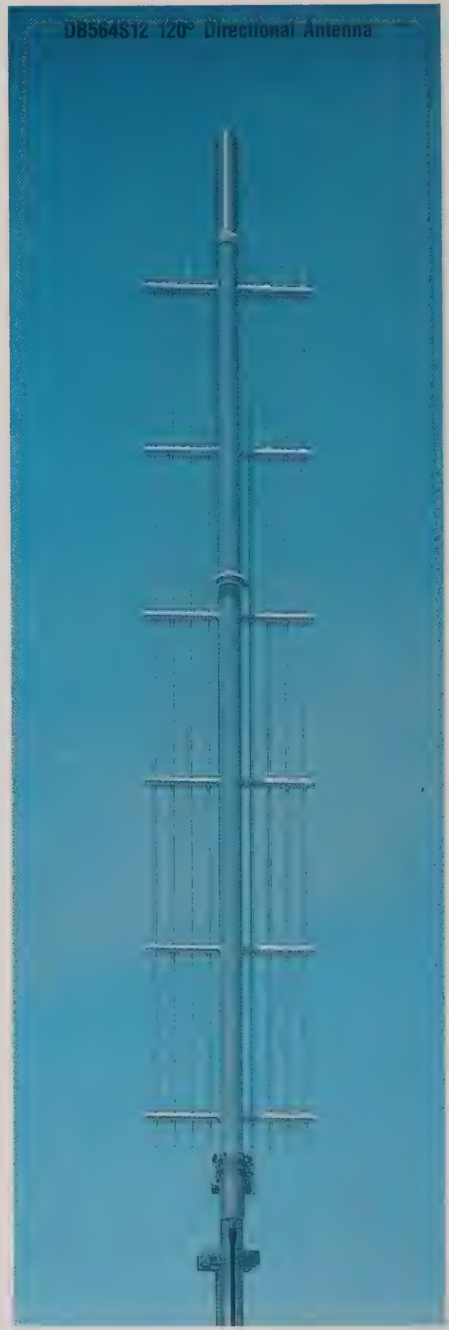


VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz





Electrical Data	
Frequency Ranges — MHz	J = 824-849, L = 869-894
Bandwidth — MHz	25
Gain — dBd	12
Front to back ratio — dB	25
Beamwidth "E" Plane (half power)	9°±.5°
Beamwidth "H" Plane (half power)	120°±5°
Maximum power — watts	330
VSWR	1.5 to 1 or better
Lightning protection	Direct ground
Termination	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data	
Dimensions:	
Overall length — ft. (m)	10.41 (3.18)
Radome length — ft. (m)	6.67 (2.03)
Backscreen	
Width — ft. (m)	1.4 (.43)
Length — ft. (m)	7.5 (2.29)
Radiating elements	Brass
Radome material	Aeroglas^{TM} Fiberglass
Backscreen materials	6061-T6 Aluminum
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	3.2 (.297)
Rated wind velocity — mph (km/hr)	100 (161)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	115 (53)
Mounting hardware	DB370 Clamp Set (plus one clamp)
Net weight — lbs. (kg)	38 (17.24)
Shipping weight — lbs. (kg)	88 (39.92)

DB567 60° DIRECTIONAL ANTENNA 17 dBd GAIN, 806-952 MHz

DECIBEL

The DB567 is a 60° directional 17 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations.

Available in seven frequency ranges (see table, below), the DB567 uses Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue™ Aeroglas™ fiberglass radome. The antenna has an all-aluminum, 90° open grid backscreen, with solid vertical rods.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulter's poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other features

Each DB567's unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

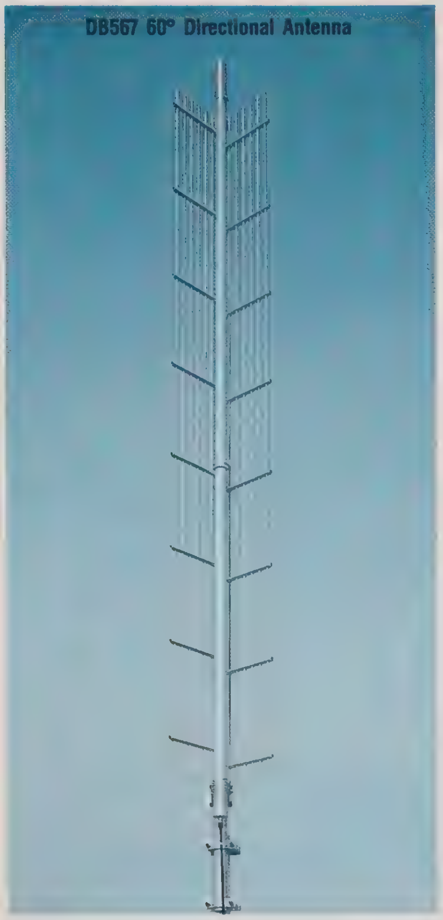
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

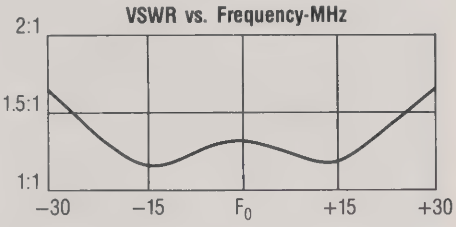
The DB567 is also available with electrical downtilt of 3° ±1°, 6° ±1°, or 10° ±1.5°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 16 dBd (main lobe). Gain on the horizon is 13 ±1 dBd, 6 ±2 dBd, or 1 ±3 dBd, respectively. For other specifications consult Systems Engineering.

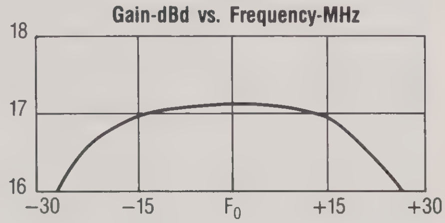
Ordering Information

Please specify frequency or range. Order DB567-A for cellular receive and DB567-B for transmit. For downtilt order DB567T3 for 3°, DB567T6 for 6° and DB567T10 for 10° downtilt. DB371 Mounting Kit is included.

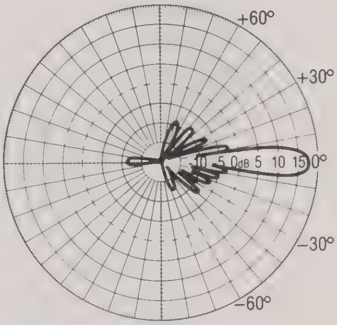
HELIAX is a registered trademark of Andrew Corporation.


DB567 60° Directional Antenna

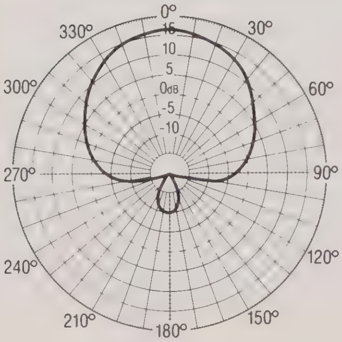

VSWR vs. Frequency-MHz


Gain-dBd vs. Frequency-MHz

Vertical Pattern



Horizontal Pattern



Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
VSWR (over 55 MHz)	1.5 to 1 or better
Nominal impedance — ohms	50
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	17
Across 55 MHz	16.5 ± 1.0
Front to back ratio — dB	25
Beamwidth "E" Plane (half power)	6°
Beamwidth "H" Plane (half power)	60°
Maximum power input — watts	550
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts.

Mechanical Data

Materials:	
Radome	Aeroglas™
Radiating elements	Brass
Backscreen (aluminum)	6061-T6
Support pipe — in. (mm)	2.375 (60.33) OD with 25 (635) wall
Mounting clamps	DB371
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	7 (.65)
Rated wind velocity — mph (km/hr)	100 (161)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	240 (108.86)
Overall length — in. (mm)	161 (4,089.4)
Radome length — in. (mm)	125.25 (3,181.4)
Backscreen width — in. (mm)	18 (457.2)
Backscreen length — in. (mm)	127 (3,225.8)
Weight (w/clamps) — lbs. (kg)	66 (29.94)
Net weight — lbs. (kg)	80 (36.29)
Shipping weight — lbs. (kg)	110 (49.9)

DB567R90 190° DIRECTIONAL ANTENNA 10 dBd GAIN, 806-952 MHz

DECIBEL

The DB567R90 is a 190° directional 10 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations.

Available in seven frequency ranges (see table, below), the DB567R90 uses Decibel's patented Center-Fed-Collinear™ design enclosed in the new DB Horizon Blue™ Aeroglas™ fiberglass radome.

The antenna has an all-aluminum, reverse 90° open grid backscreen, with solid vertical rods. The Aeroglas antenna is mounted at the outside apex of the backscreen.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulter's poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other features

Each DB567R90's unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiator, feed and matching system are copper or brass, which prevents "signal-cells" and minimizes intermodulation within the antenna.

For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

Ordering Information

Please specify frequency or range. Order DB567R90-A for cellular receive and DB567R90-B for transmit. DB371 Mounting Kit is included.

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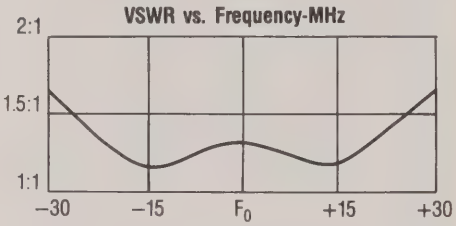
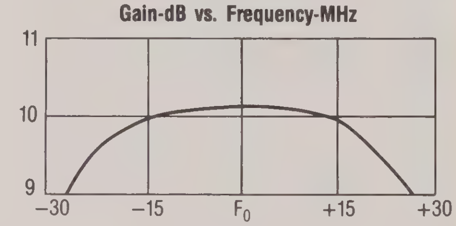
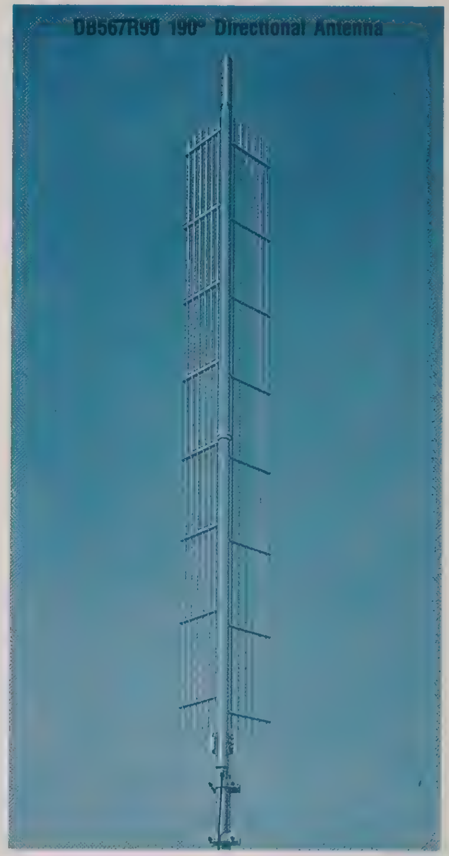
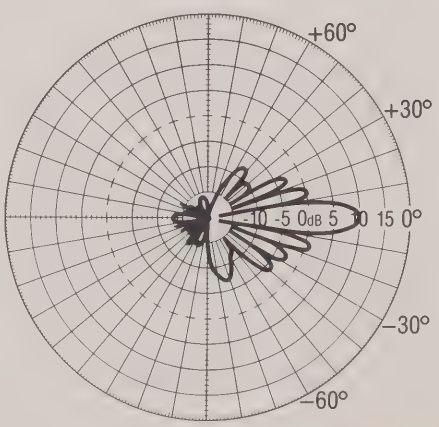


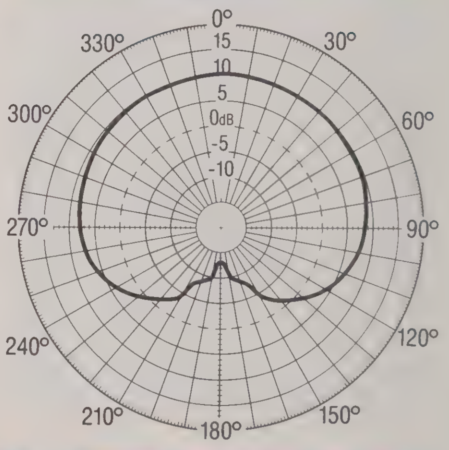




Vertical Pattern



Horizontal Pattern



Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
VSWR (over 55 MHz)	1.5 to 1 or better
Nominal impedance — ohms	50
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	10
Across 55 MHz	9.5 ± 1.0
Front to back ratio — dB	25
Beamwidth "E" Plane (half power)	6°
Beamwidth "H" Plane (half power)	190°
Maximum power input — watts	550
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Materials:	
Radome	Aeroglas™
Radiating elements	Brass
Backscreen (aluminum)	6061-T6
Support pipe — in. (mm)	2.375 (60.33) OD with 25 (635) wall
Mounting clamps	DB371
Maximum exposed area (flat plate equivalent) — ft² (m²)	7 (.65)
Rated wind velocity — mph (km/hr)	100 (161)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	240 (108.86)
Overall length — in. (mm)	161 (4,089.4)
Radome length — in. (mm)	125.25 (3,181.4)
Backscreen width — in. (mm)	18 (457.2)
Backscreen length — in. (mm)	127 (3,225.8)
Weight (w/clamps) — lbs. (kg)	66 (29.94)
Net weight — lbs. (kg)	80 (36.29)
Shipping weight — lbs. (kg)	110 (49.9)

DB567Y 60° DUAL DIRECTIONAL ANTENNA
17 dBd GAIN, 806-952 MHz

DECIBEL

Several DB567Y models are offered. The "A" version is for U.S. cellular receive. The "B" version is for transmit. "D" version is for full duplex "non-wireline" and "E" is for "wireline".

DB559 9 dB omnidirectional antennas are mounted on each side of two 90° open grid backscreens welded to a single pipe. The backscreens are made of welded aluminum with solid vertical rods.

The DB567Y uses patented Center-Fed-Collinear™ design and each antenna is enclosed in our new Aeroglas™ fiberglass radome in DB Horizon Blue™.

Aeroglas - the Best!

Aeroglas was originally used for helicopter rotor blades, Olympic vaulters' poles and racing sailboat masts because of its strength and light weight. Now, Decibel has acquired the exclusive right to Aeroglas for antenna radomes.

A special fabricating process suspends the glass threads uniformly throughout the antenna. This assures high density, uniformly thick walls for long-term moisture protection, as well as perfect radome roundness for maximum mechanical strength.

Other features

Each DB567Y's unique Center-Fed-Collinear (CFC™) array uses a series of low-loss flat radiators. The center-feed feature provides steady beam position and good VSWR across the specified frequency band.

All metals used in the radiators, feed and matching systems are copper or brass, which prevents "signal-cells" and minimizes intermodulation.

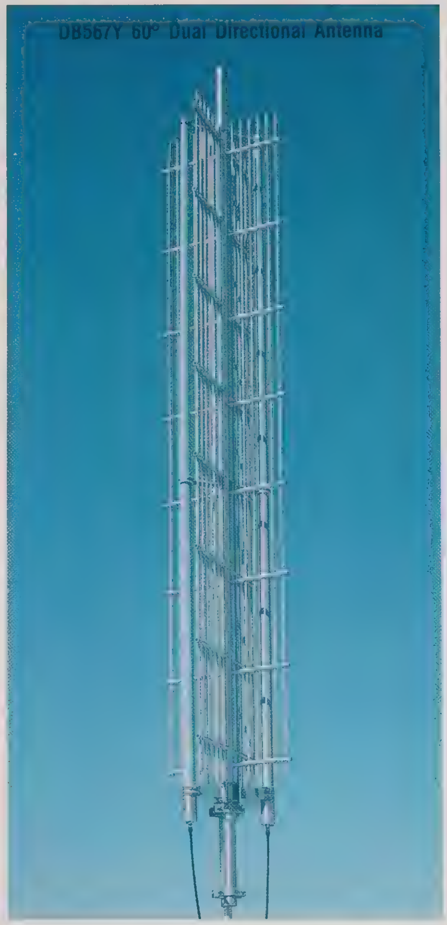
For moisture protection, the cap at the bottom of each antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions. No foam spacers are used.

The DB567Y is also available with electrical downtilt of 3° ±1°, 6° ±1°, or 10° ±1.5°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 16 dBd (main lobe). Gain on the horizon is 13 ±1 dBd, 6 ±2 dBd, or 1 ±3 dBd, respectively. For other specifications consult Systems Engineering.

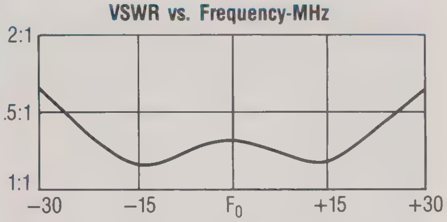
Ordering Information

Please specify frequency or range and beamtilt if any. Order DB567Y-A for cellular receive and DB567Y-B for transmit. For downtilt order DB567YT3 for 3°, DB567YT6 for 6° and DB567YT10 for 10° downtilt. DB371 Mounting Kit and one additional clamp are included.

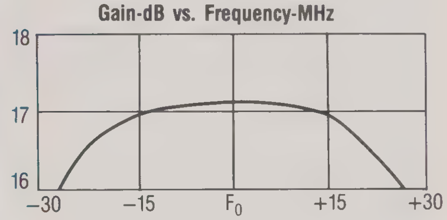
HELIAX is a registered trademark of Andrew Corporation.



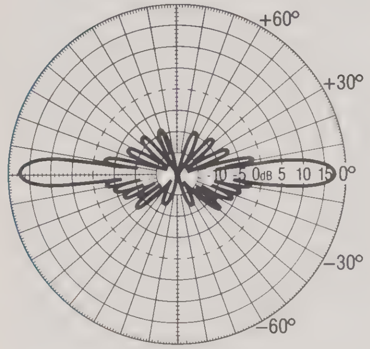
VSWR vs. Frequency-MHz



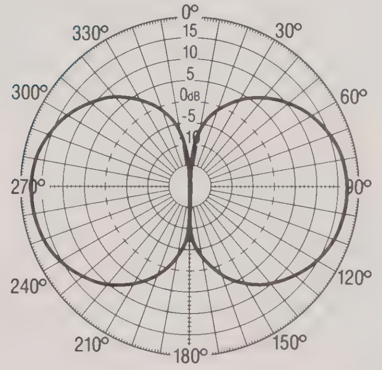
Gain-dB vs. Frequency-MHz



Vertical Radiation Pattern



Horizontal Radiation Pattern



Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
VSWR across 55 MHz	1.5 to 1 or better
Nominal impedance — ohms	50
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	17
Across 55 MHz	16.5 ± 1.0
Front to back ratio — dB	25
Beamwidth "E" Plane (half power)	6.5°
Beamwidth "H" Plane (half power)	60°
Minimum isolation between antennas — dB	45
Maximum power input — watts	550
Lightning protection	Direct ground
Termination	N-Female (fixed)
Two HELIAX® jumpers	N-Male/N-Male

Mechanical Data

Materials:	
Radome	Aeroglas™
Radiating elements	Brass
Backscreen (aluminum)	6061-T6
Support pipe — in. (mm)	2.375 (60.33) OD with 25 (635) wall
Mounting clamps	DB371
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	10 (.725)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	360 (163.29)
Overall length — in. (mm)	161 (4,089.4)
Radome length — in. (mm)	125.25 (3,181.4)
Backscreen width — in. (mm)	18 (457.2)
Backscreen length — in. (mm)	127 (3,225.8)
Weight (w/clamps) — lbs. (kg)	90 (40.82)
Net weight — lbs. (kg)	150 (68.04)
Shipping weight — lbs. (kg)	190 (86.18)

DB803, DB806 DB809 FULL WAVE DIPOLE (FWD™) OMNI ANTENNAS, 806-960 MHz

DECIBEL

The DB803, DB806 and DB809 family of FWD antennas provide from 3 to 9 dBd gain across the 800-960 MHz frequencies. They are also available as dual, triple and quad antennas in a single radome.

All antennas are omnidirectional. They maintain a low VSWR while covering the land mobile and paging bands. With a suitable combiner, one FWD antenna will service SMR, conventional and paging bands simultaneously.

The antenna, mounted straight and plumb to the top or side of a tower, will survive winds to 150 mph (241 km/hr) with .5″ (12.7 mm) of icing. For lightning protection, a .75″ (19.05 mm) brass tube extends from top to bottom of the antennas, with provisions for grounding to the tower.

Design and Construction

With FWD collinear arrays, these antennas provide high gain and broad bandwidth - up to 110 MHz - with no pattern tilt across the band. Efficient radiating elements are enclosed in a single length of fiberglass tubing. Tip deflection in 100 mph (161 km/hr) winds is 1.26° (DB809).

To reduce intermodulation when several transmitters are combined on the same antenna, all radiators, feed and matching systems are of copper or brass.

Dual and Quad Antennas

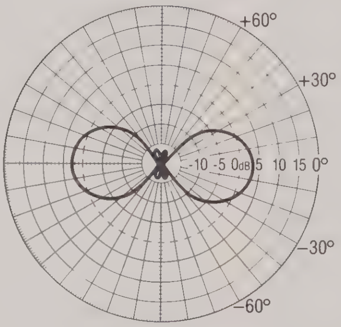
The DB806D dual antenna consists of two DB806 antennas in a single radome, each with a separate input isolated by 40 dB.

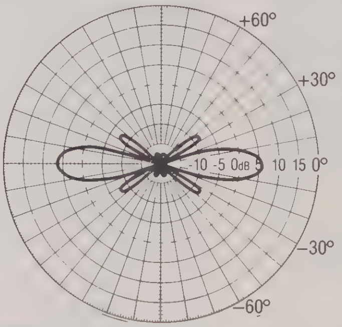
The DB803Q consists of four separate 3 dBd gain antennas in a single radome, isolated by at least 25 dBd.

Ordering Information

Please specify frequency or range. For omnidirectional use, order DB803 for 3 dBd gain, DB806 for 6 dBd gain, DB809 for 9 dBd gain, DB806D Dual Antenna with 6 dBd/6 dBd gain or 803Q with 3 dBd/3 dBd/3 dBd/3 dBd gain. A unique triple model is available. For additional information regarding multiple antennas in a single radome, call Decibel Systems Engineering. Mounting clamps, VAPOR-WRAP® and jumper are included to fit a 3″ (76.2 mm) pipe.

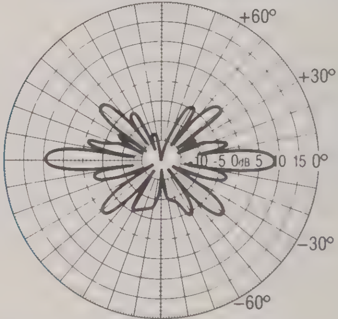
DB803 and DB806 can be shipped by UPS.


DB803H Vertical Pattern


DB806H Vertical Pattern

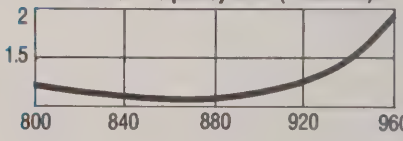
DB809 Antenna

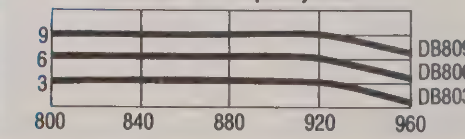
Electrical Data			
	DB803	DB806	DB809
Frequency Range — MHz	(H) 806-901, (K) 849-960	(H) 806-901, (K) 849-960	(H) 806-901, (K) 849-960
Maximum gain — dB	3	6	9
Bandwidth — MHz	110	110	110
Beamwidth "E" Plane (half power)	40°	18°	9°
Beamwidth "H" Plane (half power)	Omni	Omni	Omni
Input impedance — ohms	50	50	50
VSWR	See curve	See curve	See curve
Maximum power input — watts	500	500	500
Lightning protection	Direct ground	Direct ground	Direct ground
Termination	Type N-Female (fixed)	Type N-Female (fixed)	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male	N-Male/N-Male	N-Male/N-Male


DB809H Vertical Pattern

HELIAX is a registered trademark of Andrew Corporation.
VAPOR-WRAP is a registered trademark of Decibel Products, Inc.

Mechanical Data			
	DB803	DB806	DB809
Materials:			
Radome (fiberglass) — in. (mm)	3 (76.2) OD	3 (76.2) OD	3 (76.2) OD
Reflector screen (high strength)	Aluminum	Aluminum	Aluminum
Clamps (Galvanized or Stainless)	Steel	Steel	Steel
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	23 (10.43)	31 (14.06)	64 (29.03)
Length — in. (mm)	40 (1,016)	60 (1,524)	105 (2,667)
Tip deflection at 100 mph (161 km/hr)	.023°	.11°	1.2°
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	.51 (.047)	.78 (.072)	1.34 (.124)
Net weight — lbs. (kg)	12 (5.44)	18 (8.16)	27 (12.25)
Shipping weight — lbs. (kg)	15 (6.8)	22 (9.98)	40 (18.14)


VSWR vs. Frequency-MHz (H Models)


Gain-dBd vs. Frequency-MHz

DB803XI, DB806XI DB809XI FULL WAVE DIPOLE (FWD™) OMNI ANTENNAS, 806-960 MHz

DECIBEL

These antennas offer 3, 6 or 9 dB gain and broad bandwidth for 806-960 MHz conventional, trunked, paging, and cellular operations.

A 28″ (711 mm) aluminum alloy extension pipe (-X) at the base of the antenna facilitates mounting to platforms, towers and structures with round members to 2.25″ (57.15 mm) OD or angle members to 2.5″ (63.5 mm).

For lightning protection, a .75″ (19.05 mm) brass tube extends from top to bottom of the antenna, with provisions for grounding to the tower. Extremely rugged, the antenna will survive winds to 150 mph (241 km/hr) with .5″ (12.7 mm) of icing.

Design and Construction

Full Wave Dipole collinear arrays, these XI antennas provide high gain and broad bandwidth - up to 110 MHz - with no pattern tilt across the band. Efficient radiating elements are enclosed in a single length of fiberglass tubing. Tip deflection in 100 mph (161 km/hr) winds is 1.25° (DB809XI).

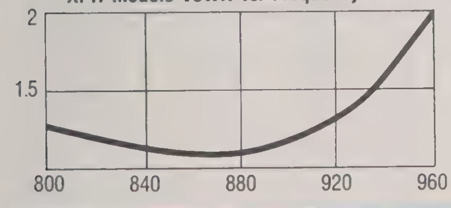
To reduce intermodulation when several transmitters are combined on the same antenna, all XI radiators, feed and matching system components are made of copper or brass.

A drain plug at the bottom of the antenna - and top when inverted - can be removed for moisture drainage and evaporation. "I" indicates inversion capability.

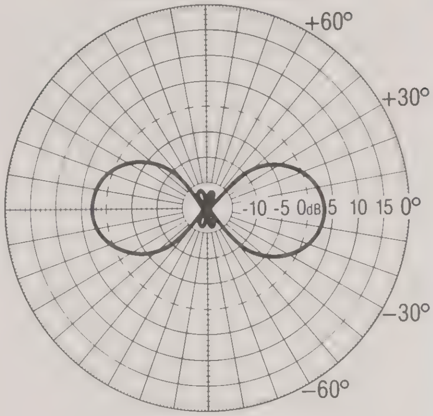
Ordering Information

Please specify frequency or range. Order DB803XI for 3 dB gain, DB806XI for 6 dB gain, DB809XI for 9 dB gain. DB365 Mounting Clamps, VAPOR-WRAP® and jumper are included.

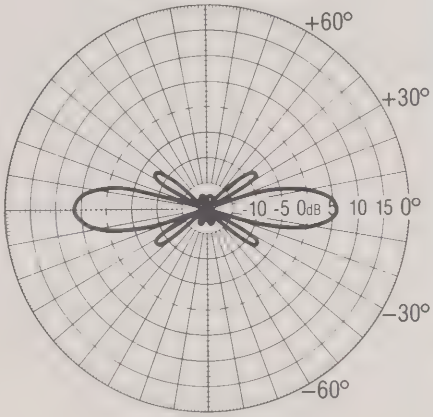
XI-H Models VSWR vs. Frequency-MHz



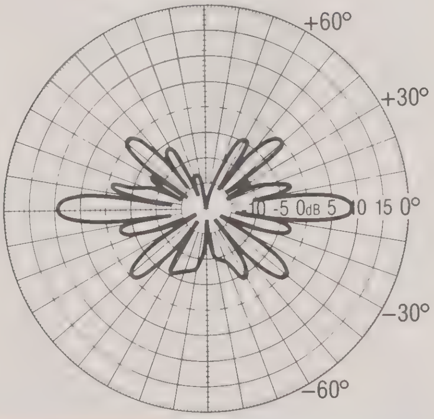
DB803XI Vertical Pattern



DB806XI Vertical Pattern



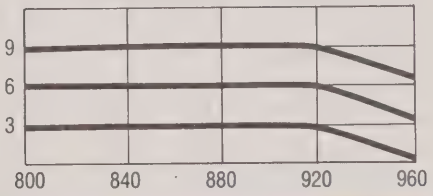
DB809XI Vertical Pattern



DB809XI Omni Antenna

DB803XI and DB806XI CAN BE SHIPPED UPS.

XI-H Models Gain-dB vs. Frequency-MHz



Electrical Data

	DB803XI	DB806XI	DB809XI
Frequency Ranges XI Model — MHz	(H) = 806-901 (K) = 850-960	(H) = 806-901 (K) = 850-960	(H) = 806-901 (K) = 850-960
Gain (maximum) — dB	3	6	9
Beamwidth "E" Plane (half power)	40°	18°	9°
Beamwidth "H" Plane (half power)	Omni	Omni	Omni
Maximum power input — watts	500	500	500
Input impedance — ohms	50	50	50
VSWR	See curve	See curve	See curve
Lightning protection	Direct ground	Direct ground	Direct ground
Termination	Type N-Female (fixed)	Type N-Female (fixed)	Type N-Female (fixed)
HELIAX® jumper	N-Male/N-Male	N-Male/N-Male	N-Male/N-Male

Mechanical Data

	DB803XI	DB806XI	DB809XI
Materials:			
Radome (fiberglass) — in. (mm)	3 (76.2) OD	3 (76.2) OD	3 (76.2) OD
Clamps (galvanized steel)	DB365	DB365	DB365
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	.51 (.049)	.78 (.072)	1.34 (.124)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	23 (10.43)	31 (14.06)	64 (29.03)
Length — in. (mm)	40 (1,016)	60 (1,524)	105 (2,667)
Tip deflection at 100 mph (161 km/hr) with extension	.023°	.11°	1.25°
Net weight — lbs. (kg)	15 (6.8)	21 (9.53)	30 (13.61)
Shipping weight — lbs. (kg)	20 (9.07)	26 (11.79)	45 (20.41)

DB806D, DB806TL DB803Q FULL WAVE DIPOLE (FWD™) MULTIPLE OMNI ANTENNAS, 806-960 MHz

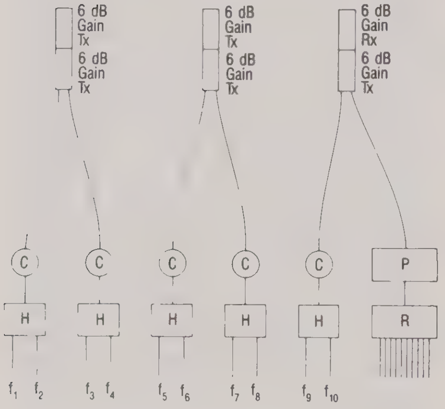
DECIBEL

The DB806D, DB806TL and DB803Q antennas are multiple antennas in a single heavy duty Minimum-Tip-Deflection™ fiberglass radom in Horizon Blue™ color.

These antennas have broad frequency bandwidths and are used wherever vertical stacking of omnidirectional antennas is of advantage.

The antennas are ideal to save space on towers or buildings or where vertical separation provides additional transmitter-to-transmitter isolation, when frequency spacings are close together. Power losses can be decreased when ferrite hybrid combiners are used to combine transmitters as close in frequency spacing as adjacent channels.

896 MHz Trunking
12.5 KHz Tx/Tx Separation



DB806D Dual Antennas

C — High Q Cavity For Tx Noise Suppression
H — Two Channel Hybrid Tx Combiner
P — Rx Preselector 896-901 MHz
R — Rx Multicoupler
f_1 thru f_{10} Ascending in 12.5 KHz Steps

The DB806D antenna is described elsewhere in this catalog; however, the diagram shows how three antennas can combine ten 806-910 MHz range trunked transmitters, at 12.5 KHz separation, plus accommodate ten receivers in the 851-960 MHz range. Vertical and horizontal patterns, gain and bandwidth are the same as a standard DB806.

The DB806TL is available in 806-910 MHz (−H) and 850-960 MHz (−K) frequency range models. Ten transmitters, also at 12.5 KHz separation, can be combined using two channel ferrite hybrids with two DB806T triple antennas with total losses of only 5.28 dB. Ten separate transmit antennas provide lower loss per transmitter channel; however, the space is rarely available for this luxury. The vertical and horizontal patterns, gain and bandwidth are the same as a standard DB806.

The FWD Quad antenna is field proven in the U.S. 850-960 MHz (K) air-to-ground radio telephone system. The DB803Q is ideal for the new U.S. air-to-ground 849-851, 894-896 MHz frequency ranges. In this system four 3 dB gain antennas are stacked in a single radome with separate lines for three transmit antennas below one receive antenna. The vertical and horizontal patterns, gain and bandwidth are the same as the standard DB803 antenna.

All antennas have HELIAX® feedlines and Andrew connectors. All antennas include mounting hardware, although some mounting requirements will require special mounting apparatus.

HELIAX is a registered trademark of Andrew Corporation.

Horizon Blue™ Color

DB806TL Triple FWD™ Omnidirectional Antenna

Ordering Information

Specify Model

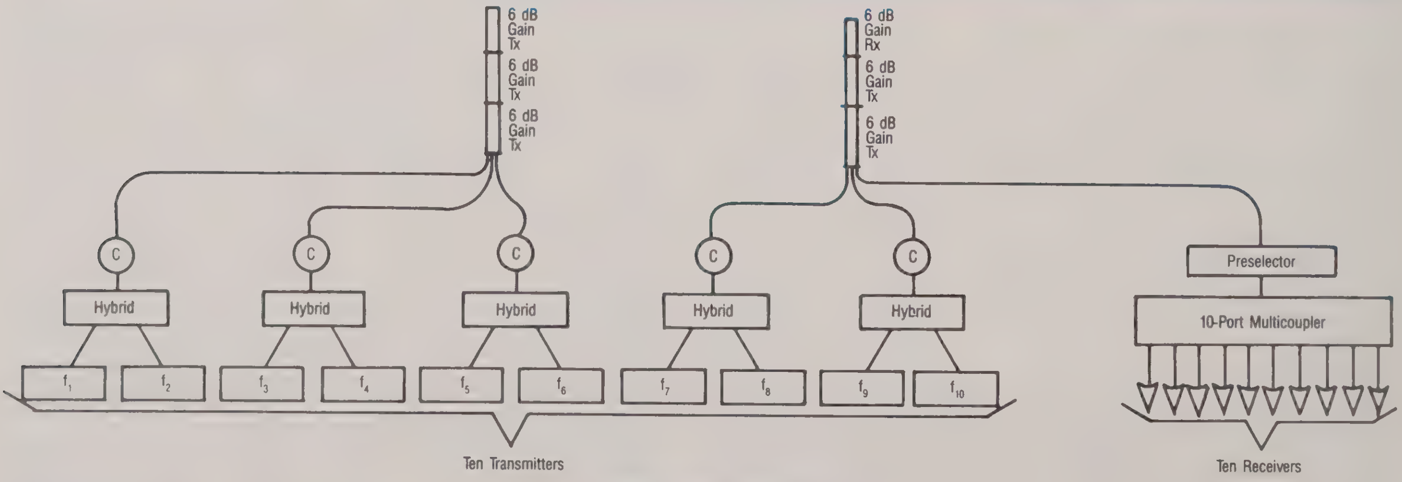
DB806D Dual antennas,
(H) 806-910 MHz, (K) 850-960 MHz

DB806TL Triple antennas,
(H) 806-910 MHz, (K) 850-960 MHz

DB803Q Quad antennas,
(H) 806-910 MHz, (K) 850-960 MHz

Mechanical Data

	DB803Q	DB806D	DB806TL
Maximum exposed area (flat plate equivalent) — ft^2 (m^2)	1.3 (.121)	1.64 (.152)	2.47 (.229)
Length — ft. (m)	7.8 (2.4)	9.8 (3.0)	14.8 (4.5)
Net weight — lbs. (kg)	27 (12.3)	27 (12.3)	38 (17.3)



DB806T Triple Antennas

DB833-A 105° DIRECTIONAL ANTENNAS
DB833-B 9 dBd GAIN, 820-900 MHz

Designed for AMPS cellular stations, these antennas provide 9 dBd gain in a 105° horizontal radiation pattern. The DB833-A is intended for 820-860 MHz receive, the DB833-B for 860-900 MHz transmit.

They mount to AMPS-style monopole platforms, and the entire antenna can be mounted on the unistruts behind the AMPS-style platform radome, if required.

Models DB833-A and DB833-B are also available for pipe-to-pipe mounting, if the optional mounting kit, DB5080, is ordered. This permits the antennas to be mounted to towers, poles and other structures.

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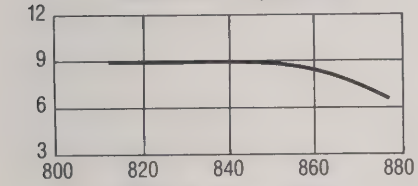
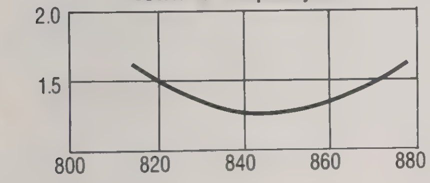
VAPOR-WRAP is a registered trademark of Decibel Products, Inc.

DB833-A

Gain-dB vs. Frequency-MHz

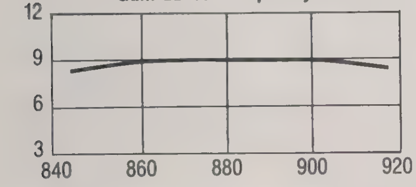


VSWR vs. Frequency-MHz

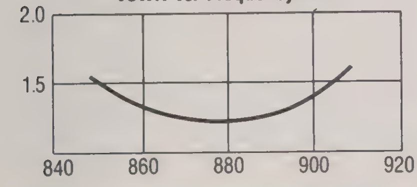


DB833-B

Gain-dB vs. Frequency-MHz



VSWR vs. Frequency-MHz



Design and Construction

All DB833 antennas use a special phasing of three radiating elements to provide the required frequency bandwidth and horizontal and vertical radiation patterns, including a major downward lobe for additional close coverage.

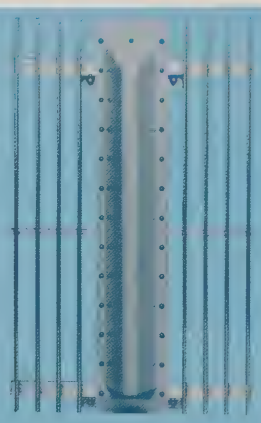
Eight-rod backscreens are made of high strength 6061-T6 welded aluminum-to-aluminum to minimize corrosion and unwanted signals.

Radiators are made of aluminum alloy and are fed via a high quality, low-loss cable harness. The one-piece radome is molded of high impact plastic and offered in DB Horizon Blue™ color. The radome and a moisture resistant gasket are secured to an integral aluminum alloy plate with stainless steel hardware.

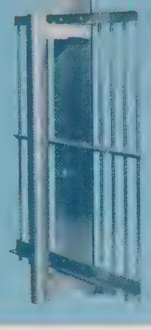
All metals used in radiators, feed and matching systems are compatible to minimize intermodulation.

Ordering Information

Order DB833-A for 820-860 MHz receive and DB833-B for 860-900 MHz transmit. For pipe mounting order DB5080 Pipe Mount Kit. VAPOR-WRAP® and jumper are included. Order DB833P-A, -B for pressurized. Order DB833F-A, -B for EIA flange, non-pressurized.

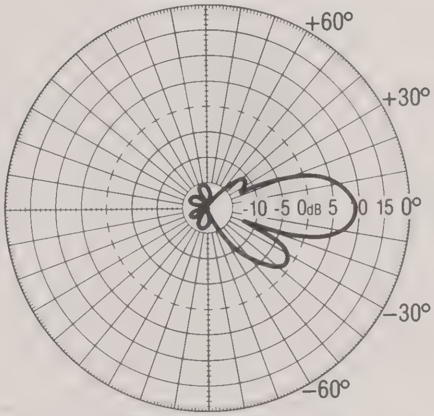


DB833-A or DB833-B Antenna

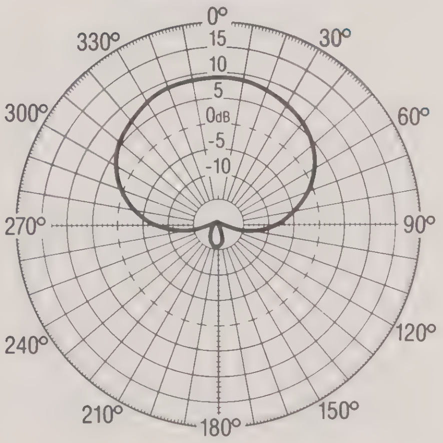


Antenna with optional Pipe Mounting Kit

Vertical Pattern



Horizontal Pattern



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Electrical Data

Frequency Ranges — MHz	
DB833-A	820-860
DB833-B	860-900
Maximum gain — dB	9±.5
Beamwidth "E" Plane (half power)	24°±2°
Beamwidth "H" Plane (half power)	105°±5°
Front to back ratio — dB	25
Maximum power input — watts	525
Input impedance — ohms	50
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Materials:	
Radome	High impact molded plastic
Reflector screen	6061-T6
Radiators	Aluminum alloy
Support pipe	6061-T6
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	1.85 (.172)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	74 (33.57)
Dimensions (H×W×D) — in. (mm)	33 (838.2)×20.5 (520.7)×7 (177.8)
Net weight — lbs. (kg)	
DB833-A or DB833-B	12 (5.44)
DB5080	5 (2.27)
Shipping weight — lbs. (kg)	
DB833-A or DB833-B	14 (6.35)
DB5080	10 (4.53)

DB833-F 105° DIRECTIONAL ANTENNA 9 dBd GAIN, 820-900 MHz

Designed for AMPS cellular stations, this antenna provides gain of 9 dBd in a 105° horizontal radiation pattern.

It mounts to AMPS-style monopole platforms, and the entire antenna can be mounted on the unistruts behind the AMPS-style platform radome, if required.

Model DB833-F is also available for pipe-to-pipe mounting, if the optional mounting kit, DB5080, is ordered. This permits the antenna to be mounted to towers, poles and other structures.

Design and Construction

All DB833 antennas use a special phasing of three radiating elements to provide the required 820-900 MHz frequency bandwidth and horizontal and vertical radiation patterns, including a major downward lobe for additional close coverage.

Eight-rod backscreens are made of high strength 6061-T6 welded aluminum-to-aluminum to minimize corrosion and unwanted signals.

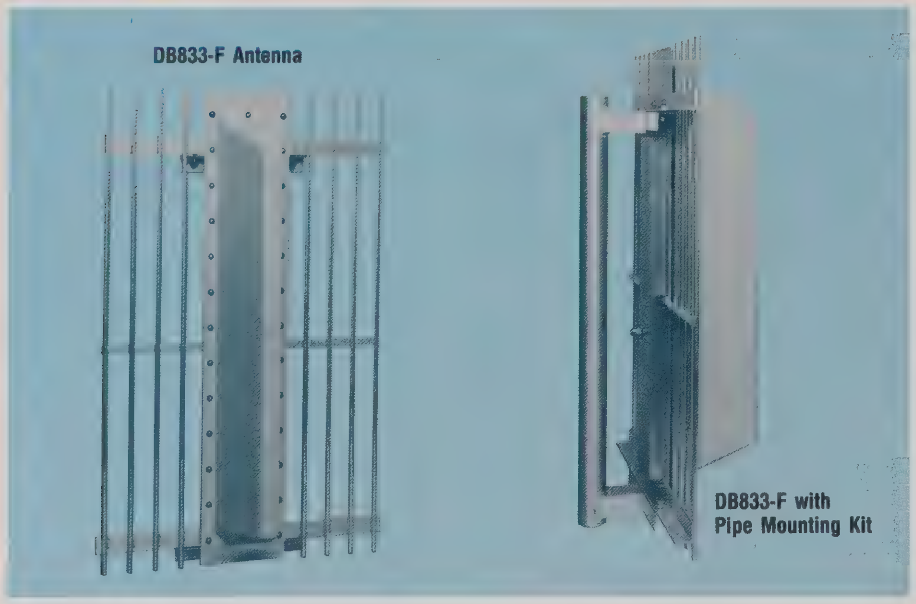
Radiators are made of aluminum alloy and are fed via a high quality, low-loss cable harness.

The one-piece radome is molded of high impact plastic and offered in DB Horizon Blue™ color. The radome and a moisture resistant gasket are secured to an integral aluminum alloy plate with stainless steel hardware.

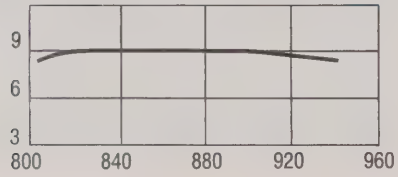
All metals used in radiators, feed and matching systems are compatible to minimize intermodulation.

Ordering Information

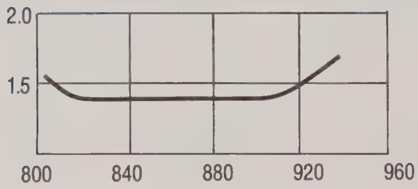
Order DB833-F for AMPS-style platforms. For pipe mounting order DB5080 Pipe Mount Kit. VAPOR-WRAP® and jumper are included. Order DB833P-F for pressurized. Order DB833F-F for EIA flange, non-pressurized.



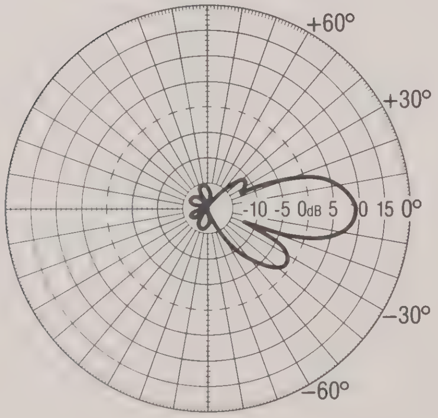
Gain-dB vs. Frequency-MHz



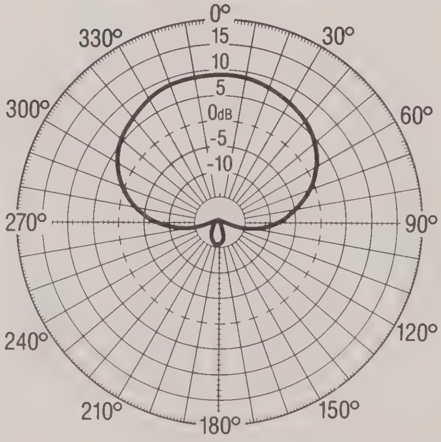
VSWR vs. Frequency-MHz



DB833-F Vertical Pattern



DB833-F Horizontal Pattern



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VAPOR-WRAP is a registered trademark of Decibel Products, Inc.

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Electrical Data

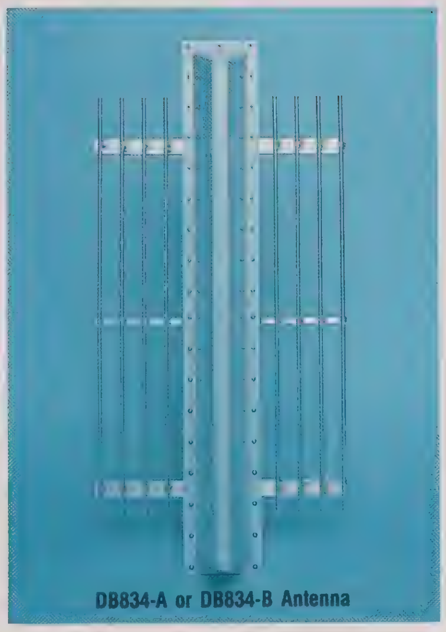
Frequency Range — MHz	820-900
Gain — dBd	9±1
VSWR	1.5 to 1 or better
Beamwidth "E" Plane (half power)	24°±2°
Beamwidth "H" Plane (half power)	105°±5°
Front to back ratio — dB	25
Maximum power input — watts	525
Nominal impedance — ohms	50
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Materials:	
Radome	High impact molded plastic
Reflector screen	6061-T6
Radiators	Aluminum alloy
Support pipe	6061-T6
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	2 (.186)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	80 (36.29)
Dimensions (H×W×D) — in. (mm)	33 (838.2)×20.5 (520.7)×7 (177.8)
Net weight — lbs. (kg)	
DB833-F	30 (13.61)
DB5080	5 (2.27)
Shipping weight — lbs. (kg)	
DB833-F	32 (14.52)
DB5080	10 (4.53)

DB834-A DB834-B 105° DIRECTIONAL ANTENNA NNA 10.5 dBd GAIN, 820-894 MHz

DECIBEL


DB834-A or DB834-B Antenna

Antenna with Pipe Mounting Kit

Designed for AMPS cellular stations, these antennas provide 10.5 dBd gain in a 105° horizontal radiation pattern. The DB834-A is made for 820-860 MHz receive, the DB834-B for 869-894 MHz transmit.

The antennas mount to AMPS-style monopole platforms on the unistruts. They can also be mounted on towers, poles and other structures via an optional pipe mounting kit.

Design and Construction

These antennas use a special phasing of four radiating elements to provide the required frequency bandwidth and horizontal and vertical radiation patterns, including a major downward lobe for additional close coverage.

Eight-rod backscreens are made of high strength 6061-T6 welded aluminum-to-aluminum to minimize corrosion and unwanted electrical signals.

Radiators are made of aluminum alloy and are fed via a high quality, low-loss cable harness. The one-peice radome is a molded high-impact plastic material painted in DB Horizon Blue™ color. The radome and a moisture resistant gasket are secured to an integral aluminum alloy plate with stainless steel hardware. All metals used in radiators, feed and matching systems are compatible to minimize intermodulation.

Ordering Information

Order DB834-A for 820-860 MHz receive. Order DB834-B for 869-894 MHz transmit. DB5080 Pipe-to-Pipe Mounting Kit is optional and includes the pipe with welded angle members, four stainless steel bolts, washers and nuts and a DB365 Clamp Set to fit round pipes to 2.75″ (69.85 mm) OD or angle members to 2.5″ (62.5 mm).

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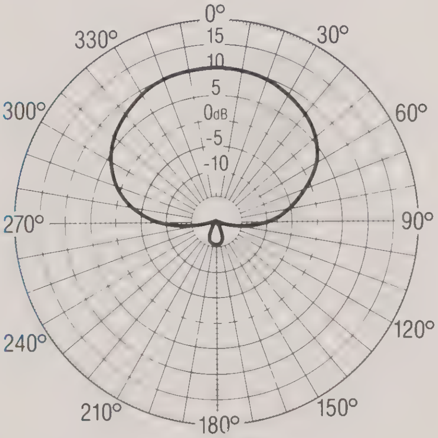
Electrical Data

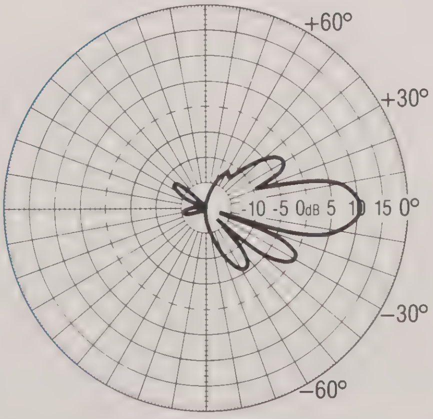
Frequency Ranges — MHz	
DB834-A	820-860
DB834-B	869-894
Gain (maximum) — dB	10.5±.5
Beamwidth "E" Plane (half power)	18.5°±2°
Beamwidth "H" Plane (half power)	105°±5°
Front-to-back ratio — dB	25
Maximum power input — watts	525
Input impedance — ohms	50
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data

Materials:	
Radome	High impact molded plastic
Reflector screen	6061-T6
Radiators	Aluminum alloy
Mounting pipe	6061-T6
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	2.23 (.207)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	80.1 (36.33)
Dimensions (H×W×D) — in. (mm)	42 (1067)× 20.5 (520.7)×7 (177.8)
Net weight — lbs. (kg)	
DB834-A or DB834-B	14.5 (6.58)
DB5080	5.0 (2.27)
Shipping weight — lbs. (kg)	
DB834-A or DB834-B	16.5 (7.48)
DB5080	10.0 (4.53)



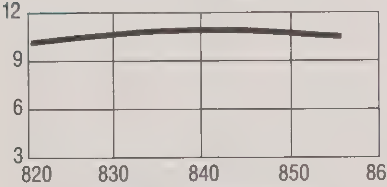
Horizontal Pattern



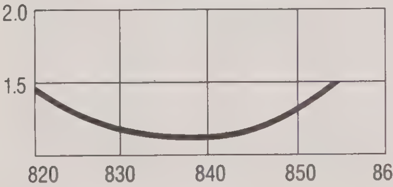
Vertical Pattern

DB834-A

Gain-dB vs. Frequency-MHz

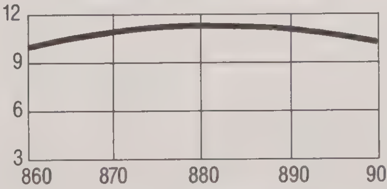


VSWR vs. Frequency-MHz

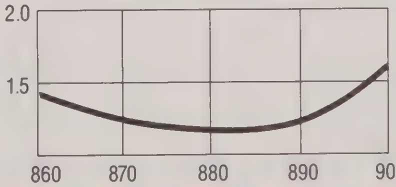


DB834-B

Gain-dB vs. Frequency-MHz

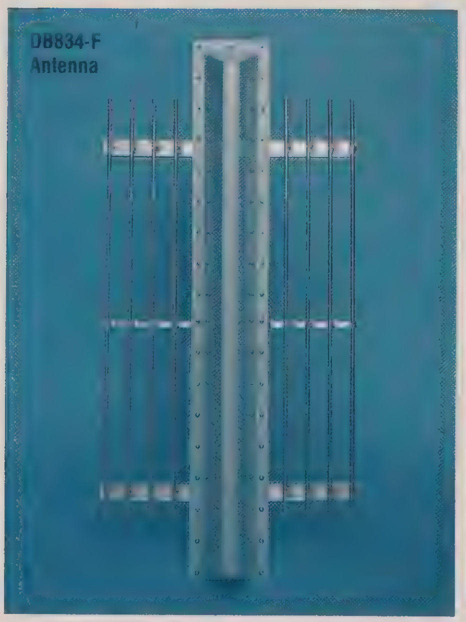


VSWR vs. Frequency-MHz



DB834-F 105° DIRECTIONAL ANTENNA 10 dBd GAIN, 820-900 MHz

DECIBEL


DB834-F Antenna

DB834-F with Pipe-to-Pipe Mount Kit

Designed for AMPS cellular stations, this antenna provides gain of 10 dBd in a 105° horizontal radiation pattern.

It mounts to AMPS-style monopole platforms.

Model DB834-F is also available for pipe-to-pipe mounting, if the optional mounting kit, DB5080, is ordered. This permits the antenna to be mounted to towers, poles and other structures.

Design and Construction

The DB834-F antenna uses a special phasing of four radiating elements to provide the required 820-900 MHz frequency bandwidth and horizontal and vertical radiation patterns, including a major downward lobe for additional close coverage.

Eight-rod backscreens are made of high strength 6061-T6 welded aluminum-to-aluminum to minimize corrosion and unwanted signals.

Radiators are made of aluminum alloy and are fed via a high quality, low-loss cable harness.

The one-piece radome is molded of high impact plastic and offered in new DB Horizon Blue™ color. The radome and a moisture resistant gasket are secured to an integral aluminum alloy plate with stainless steel hardware.

All metals used in radiators, feed and matching systems are compatible to minimize intermodulation.

Ordering Information

Order DB834-F for AMPS-style platforms. For pipe mounting order DB5080 Pipe Mount Kit. VAPOR-WRAP® and jumper are included.

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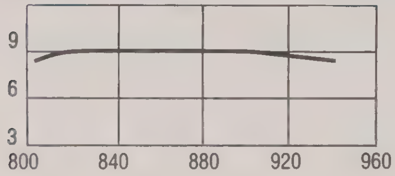
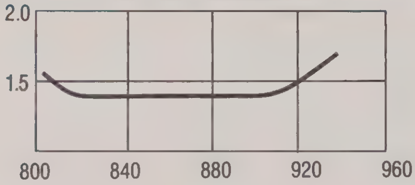
VAPOR-WRAP is a registered trademark of Decibel Products, Inc.

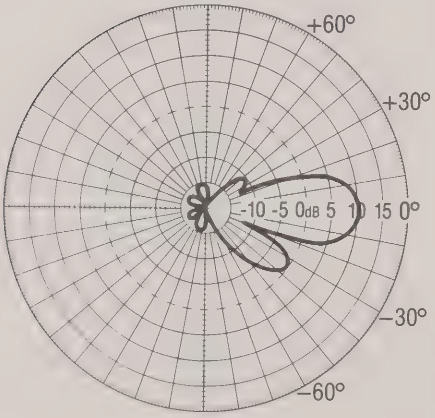
Gain-dB vs. Frequency-MHz



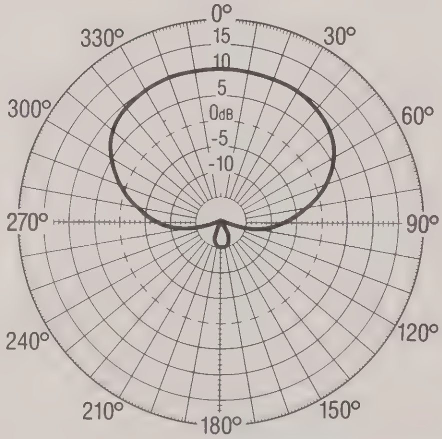
VSWR vs. Frequency-MHz



DB834-F Vertical Pattern



DB834-F Horizontal Pattern



Electrical Data	
Frequency Range — MHz	820-900
Gain — dBd	10±1
VSWR	1.5 to 1 or better
Beamwidth "E" Plane (half power)	24°±2°
Beamwidth "H" Plane (half power)	105°±5°
Front to back ratio — dB	25
Maximum power input — watts	525
Nominal impedance — ohms	50
Lightning protection	Direct ground
Termination	N-Female (fixed)
HELIAX® jumper	N-Male/N-Male

Mechanical Data	
Materials:	
Radome	High impact molded plastic
Reflector screen	6061-T6
Radiators	Aluminum alloy
Support pipe	6061-T6
Mounting clamps	Galvanized steel
Maximum exposed area (flat plate equivalent) — ft² (m²)	2.35 (.219)
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	80 (36.29)
Dimensions (H×W×D) — in. (mm)	42 (1,066.8)×20.5 (520.7)×7 (177.8)
Net weight — lbs. (kg)	
DB834-F	38 (17.24)
DB5080	5 (2.27)
Shipping weight — lbs. (kg)	
DB834-F	40 (18.14)
DB5080	10 (4.53)

DB860 OMNIDIRECTIONAL ANTENNA 10 dBd GAIN, 806-952 MHz

DB860 Omnidirectional Antenna

The DB860 is an omnidirectional 10 dBd gain antenna for 800/900 MHz conventional, trunking, paging and cellular radiotelephone site installations.

Available in seven frequency ranges (see table, below), the DB860 uses Decibel's Collinear design enclosed in the DB Horizon Blue™ extruded fiberglass radome.

A 27″ (686 mm) aluminum alloy pipe at the base of the antenna facilitates mounting to platforms, towers and structures with round members to 2.25″ (57.15 mm) OD or angle members to 2.5″ (63.5 mm).

For lightning protection, a large diameter wire conductor extends from top to bottom, with provisions for grounding to the tower. Extremely rugged, the antenna will survive winds to 125 mph (201 km/hr) with .5″ (12.7 mm) of icing.

Design and Construction

A Collinear array is used, consisting of a series of low-loss transposed flat radiators. They are enclosed in a single length of Minimum-Tip-Deflection (MTD™) 3″ (76.2 mm) OD fiberglass tube with .25″ (6.35 mm) walls. Tip deflection in 100 mph (161 km/hr) winds is 3.1°.

All metals used in the radiator, feed and matching systems are brass, which prevents "signal-cells" and minimized intermodulation within the antenna.

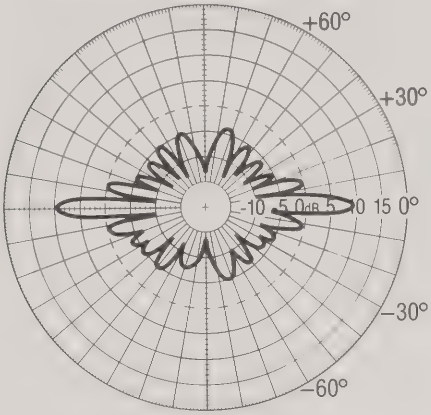
For moisture protection, the cap at the bottom of the antenna has a moisture-sealed bulkhead N-Female connector. Removable drain plugs are provided at each end of the antenna to ensure proper drainage of condensation in upright or inverted mounting positions.

The DB860 is also available with electrical downtilt of 3° ±1°, 60° ±1°, or 10° ±1.50°. Downtilt antenna bandwidth is limited to 25 MHz and gain is 9 dB (main lobe). Gain on the horizon is 5 ±1 dB, −2 ±2 dB, or −7 ±3 dB, respectively. For other specifications consult Decibel Systems Engineering.

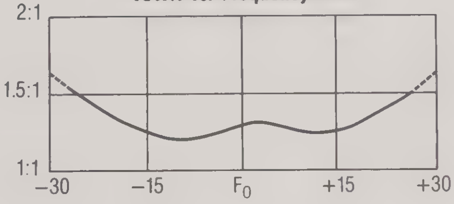
Ordering Information

Please specify exact frequency or range. Order DB860 for 10 dBd gain. For downtilt order DB860T3 for 3°, DB860T6 for 6° and DB860T10 for 10° downtilt. DB370 Mounting Kit is included.

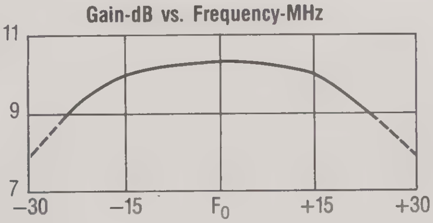
DB860 Typical Vertical Radiation Pattern



VSWR vs. Frequency-MHz



Gain-dB vs. Frequency-MHz



HELIAX is a registered trademark of Andrew Corporation

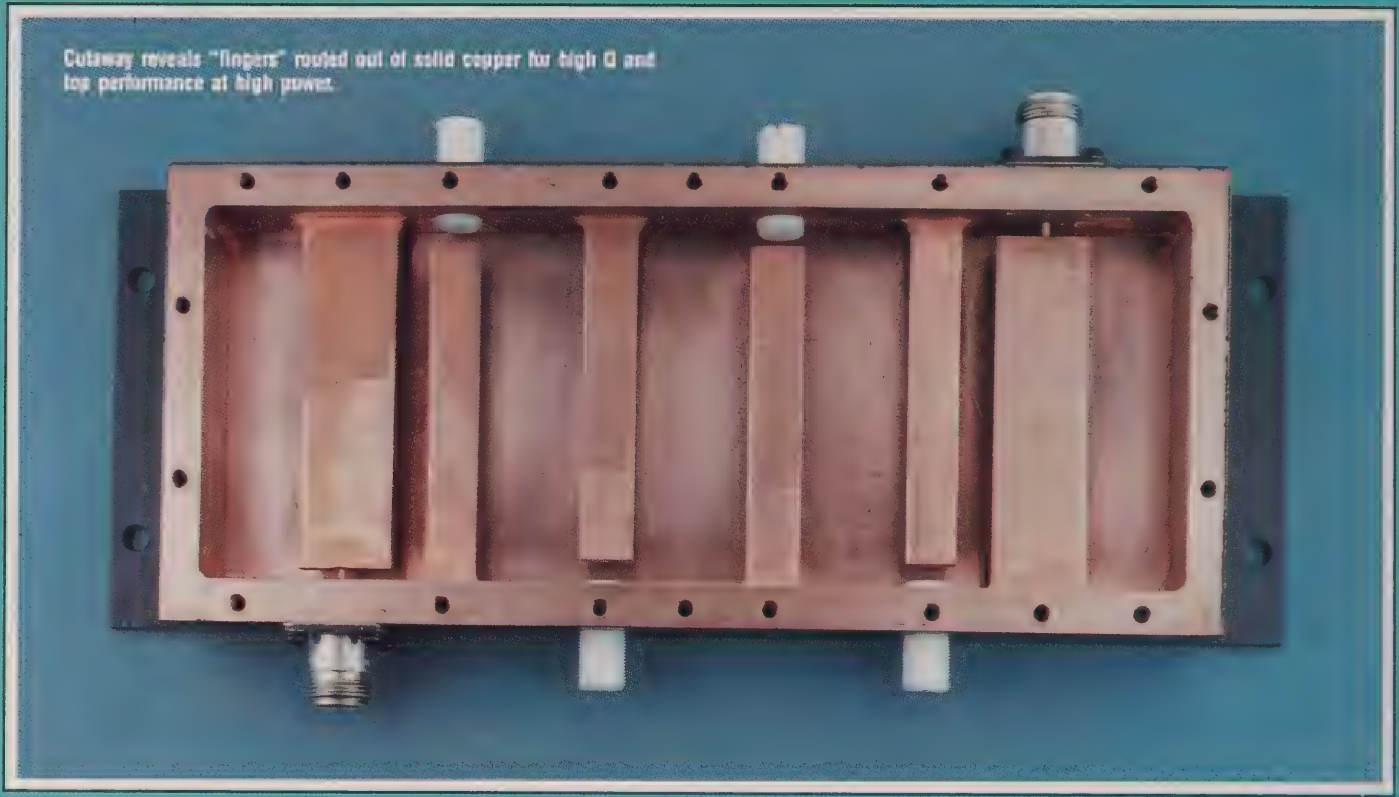
Electrical Data

Frequency Ranges — MHz	A = 806-861, B = 849-894, C = 816-866, D = 824-880, E = 835-894, F = 896-952, G = 928-932
VSWR (over 55 MHz)	1.5 to 1 or better
Bandwidth/Gain (minimum) — dB	
Across 35 MHz	10
Across 55 MHz	9.5 ± 1.0
Beamwidth "E" Plane (half power)	4.5°
Beamwidth "H" Plane (half power)	Omni
Maximum power input — watts	550
Lightning protection	Direct ground
Termination	Type N-Female (fixed)
HELIAX® jumper, 3 ft. included	N-Male/N-Male

Note: For 928-932 MHz use -Q Suffix for 1000 watts. Special order only.

Mechanical Data

Materials:	
Radome	Fiberglass, MTD™
Radiators	Brass
Support pipe	Aluminum alloy
Mounting clamps	Galvanized steel DB370
Lateral thrust at 100 mph (161 km/hr) — lbs. (kg)	80 (1.48)
Tip deflection at 100 mph (161 km/hr)	3.1°
Length:	
Overall — ft. (m)	16.33 (4.98)
Radome — ft. (m)	14 (4.27)
Support pipe — in. (mm)	27 (685.8)
Net weight — lbs. (kg)	43 (19.5)
Shipping weight — lbs. (kg)	72 (32.66)
Hardware shipped separate — lbs. (kg)	12 (5.44)



Cutaway reveals "fingers" routed out of solid copper for high Q and top performance at high power.

Filters—the Quest for Quality!

Decibel is at the forefront of technology with its filters, duplexers and combiners.

Our Cube Filter® uses waveguide technology and has low loss and patented temperature compensation.

Some of Decibel's cavities have the highest "Q" in the industry, when true specs are compared. And these cavities, or ones similar to them, are often the basic building blocks of our high quality filters, duplexers, combiners, etc.

To achieve this high "Q" performance, we use good workmanship and many special techniques and materials. Here are some of the more important ones:

☐ The tuning piston is made of a threaded Invar steel rod with almost no expansion, which keeps it tuned in all temperatures.

☐ Copper cavities, completely soldered, are used for highest performance. Less costly aluminum cavities are also used when requirements are less stringent.

☐ Current carrying elements are made of copper or silver plated brass, including the center conductor.

☐ Beryllium copper fingerstock with spring compression is used to maintain positive contact between the fixed and moving parts of the center conductor.

We have also updated products and added new ones, such as SHAPE FACTORED FILTERS®, to meet frequency requirements and customer growth.

Of course, our new products — like our standard ones — maintain our quest for the highest quality.

If you want quality, you want Decibel filters, cavities, duplexers and combiners.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

DB4028 BANDPASS CAVITIES 806-960 MHz

The DB4028 is a quarter wavelength, high Q cavity for the 806-960 MHz bands. Installed between the antenna and the transmitter or receiver, the cavity reduces interference that is above and below the desired frequency. See curves.

A 2-cavity model is also offered for improved attenuation of the undesired signal.

Design and Construction

The cavity is tuned to any resonant frequency in the band by turning the threaded Invar rod, which varies the piston length in the center coaxial conductor. Contact is maintained by silver plated beryllium contacts.

The Invar rod, which has almost zero expansion, assures frequency stability over a wide range of temperatures.

Selectivity is adjustable from the back of each cavity. Rotatable coupling loops can be set to correspond to total attenuations of 0.5 (in single cavities) to 4.0 dB (in dual cavities), with minimum attenuation of the desired signal. See curves.

Single or dual cavities are shipped on a standard panel for 19″ (482.6 mm) rack mounting.

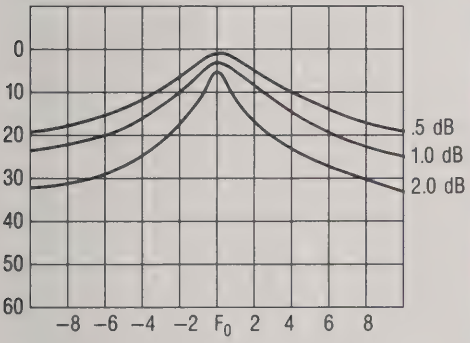
Ordering Information

Please specify exact frequency. Order DB4028-1 for single cavity, DB4028-2 for 2-cavity model.

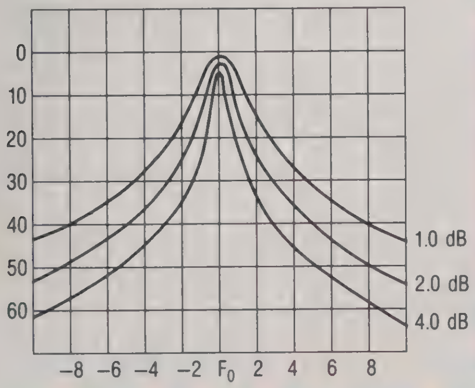
CAN BE SHIPPED UPS.

DB4028-2 Bandpass Cavities

DB4028-1 Attenuation-dB vs. Frequency-MHz



DB4028-2 Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4028-1	DB4028-2
Frequency Range — MHz	806-960	806-960
Insertion loss (desired frequency) — dB	Adjustable -0.5 to 2.0	Adjustable -1.0 to 4.0
Attenuation (undesired frequency)	See curves	See curves
Impedance — ohms	50	50
VSWR at maximum resonance	1.5 to 1	1.5 to 1
Maximum power input (continuous duty) — watts	125	125
Temperature range (for negligible frequency shift) — C°	−40 to +60	−40 to +60
Cavity electrical length	¼ wavelength	¼ wavelength
Number of cavities	1	2

Mechanical Data

	DB4028-1	DB4028-2
Dimensions (H×W×D) — in. (mm)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)	5.25 (133.35)×19 (482.6)× 10.5 (266.7)
Materials		
Outer conductor	Copper	Copper
Inner conductor	Copper	Copper
Tuning rod	Invar	Invar
Coupling loops	Copper	Copper
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	7 (3.18)	12 (5.44)
Shipping weight — lbs. (kg)	10 (4.54)	15 (6.8)

DB4200 APERTURE COUPLED BANDPASS FILTER, 806-1000 MHz

DECIBEL

The DB4200 is a 6-cavity filter that provides excellent bandpass performance for trunked and cellular systems — U.S. or international — in the 806-1000 MHz frequency range.

Aperture coupling techniques make it ideal for trunked systems with 15 MHz bandwidths or cellular systems with 20 MHz bandwidths. Aperture coupling also allows the filter to be adapted to other applications. Consult Decibel's Systems Engineering for advice on specific use of the DB4200 filter in the following applications:

System B 880-890 MHz
New System B 891.5-894 MHz
System A 869-880 MHz
New System A 890-891.5 MHz

800/900 MHz Trunked-Transmit

851-866 MHz
935-940 MHz

DB4200 Bandpass Filter

Design and Construction

Materials are all copper, and the design is frequency stable at all power levels to 600 watts.

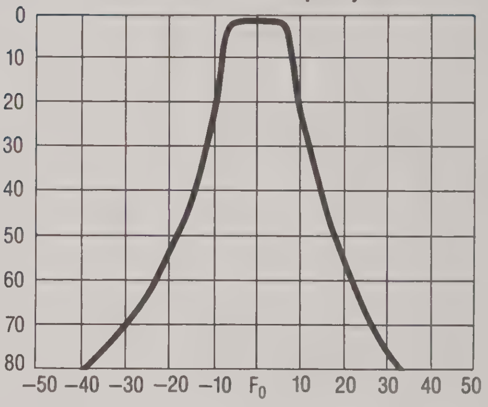
The insertion loss at 15 MHz bandwidth is 1.0 dB, at 20 MHz bandwidth 0.6 dB. VSWR is 1.25 to 1.

Ordering Information

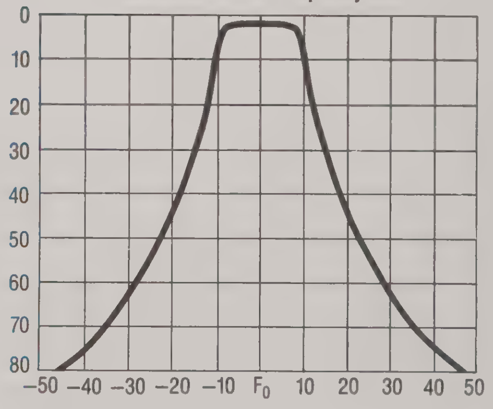
Please specify frequency range and 15 or 20 MHz bandwidth. Call the factory for requirements with less than 15 MHz.

CAN BE SHIPPED UPS.

DB4200 at 15 MHz Bandwidth
Attenuation-dB vs. Frequency-MHz



DB4200 at 20 MHz Bandwidth
Attenuation-dB vs. Frequency-MHz



Electrical Data	
Frequency Range — MHz	806-1000
Continuous power input — watts	600
Bandwidth — MHz	15 or 20
Insertion loss — dB	
At 15 MHz bandwidth	1.0
At 20 MHz bandwidth	0.6
Maximum VSWR	1.25 to 1
Impedance — ohms	50
Connector	N-Female
Temperature range — C°	−40 to +71

Mechanical Data	
Dimensions — in. (mm)	
Height	5.25 (133.35)
Width	19.0 (482.6)
Depth	12.25 (311.15)
Net weight — lbs. (kg)	12.5 (317.5)

DB4190H-WT, DB4192-WT DB4196-WT SHAPE FACTORED FILTERS® 806-960 MHz

DECIBEL

Three models of these SHAPE FACTORED FILTERS are offered to give broadband responses in the 806-960 MHz frequencies.

Each model provides an essentially flat passband with a steep-sloped rejection characteristic to isolate undesired out-of-band frequencies.

Applications

Primarily, the DB4192-WT and DB4196-WT filters are designed to go between a receiver multicoupler and a receive antenna to prevent intermodulation and receiver desensitization caused by nearby transmitters.

In another application the DB4190H-WT filter goes between a transmitter combiner and a transmit antenna to reduce interference caused by the transmitter noise that would affect nearby receivers.

The basic DB4190H-WT and DB4192-WT filters employ stripline construction using interdigital technology. See charts for frequency responses.

The DB4196 uses a combline design to cover the entire new U.S. 896-901 MHz receiver frequency band for trunked systems. It specifically attenuates the nearby original 870-890 MHz U.S. cellular telephone site transmit frequency band by over 40 dB and attenuates its new 890-894 MHz reserve frequency band by 20 dB.

Maximum power input is 150 watts for the DB4192 and DB4196. However, the DB4190H-WT can handle a maximum power input of 300 watts and has a 0.5 dB insertion loss.

These filters can mount to a flat surface via tabs. When rack mounting is desired, use suffix WT after the model number for a panel mounting tray.

DB4192-WT

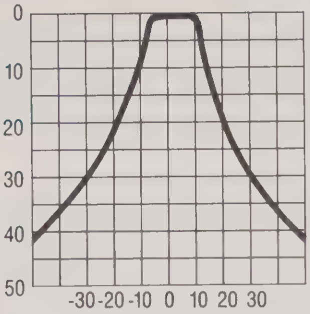
DB4196-WT

Ordering Information

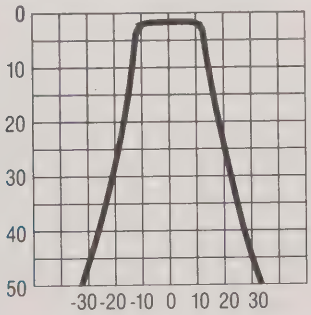
Please specify exact operational frequencies. Order DB4190H-WT for 851-866 MHz, DB4192-WT for 806-821 MHz, and DB4196-WT for 896-901 MHz. Add WT to the model number when ordering a panel mounting tray.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

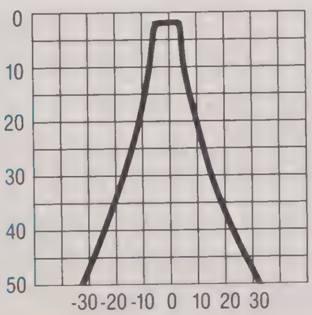
DB4190H-WT Attenuation-dB vs. Frequency-MHz



DB4192-WT Attenuation-dB vs. Frequency-MHz



DB4196-WT Attenuation-dB vs. Frequency-MHz



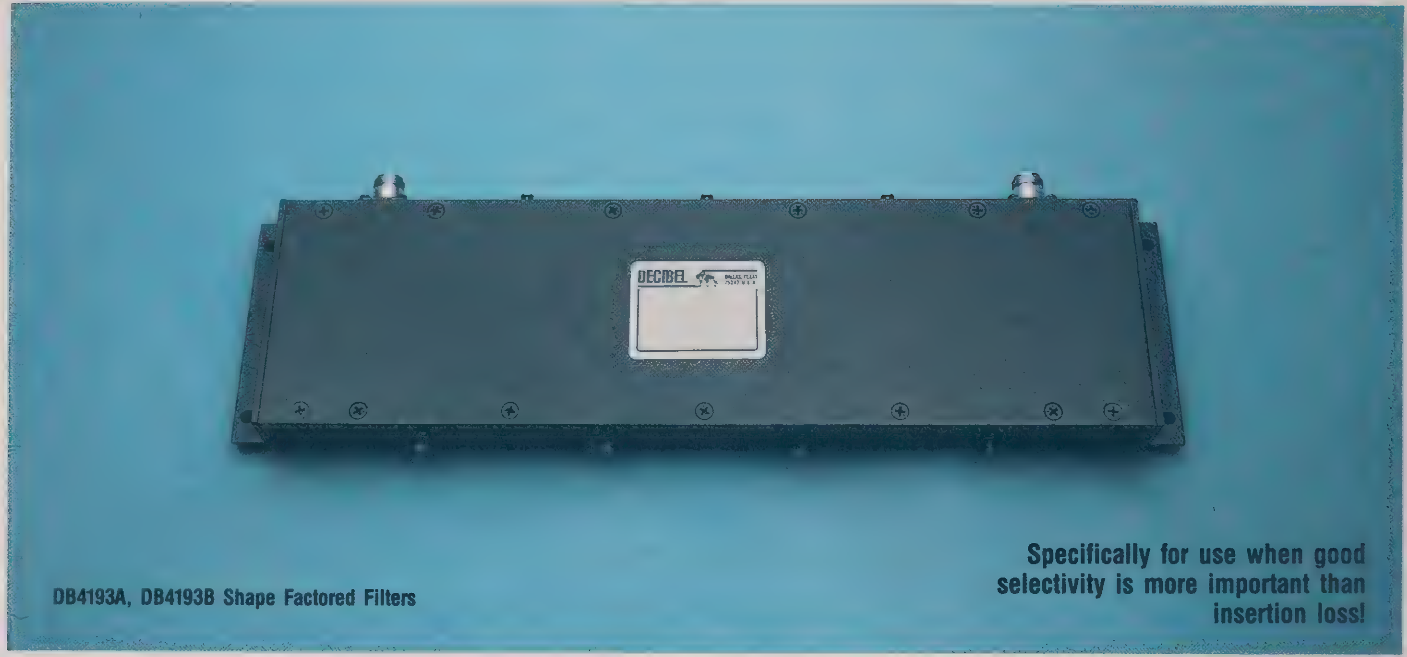
Electrical Data

	DB4190H-WT	DB4192-WT	DB4196-WT
Frequency Range — MHz	851-866	806-821	896-901
Maximum power input (continuous duty) — watts	300	150	150
Passband — MHz	16	15	5
Insertion loss — dB	0.5 nominal	1	1.3
Attenuation — dB at ±45 MHz from center pass frequency	>−45	>−60	>60
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60

Mechanical Data

	DB4190H-WT	DB4192-WT	DB4196-WT
Dimensions (D×W×H) — in. (mm)	12 (304.8)× 19 (482.6)× 5.25 (133.35)	12 (304.8)× 19 (482.6)× 5.25 (133.35)	12 (304.8)× 19 (482.6)× 5.25 (133.35)
Mounting — in. (mm)	19 (482.6) rack mount	19 (482.6) rack mount	19 (482.6) rack mount
Connector terminations	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	7 (3.17)	6 (2.72)	6 (2.72)
Shipping weight — lbs. (kg)	10 (4.54)	8 (3.63)	8 (3.63)

DB4193A DB4193B SHAPE FACTORED RECEIVER FILTERS® 825-845 (CELLULAR) MHz



DB4193A, DB4193B Shape Factored Filters

Specifically for use when good selectivity is more important than insertion loss!

Two models of these Shape Factored Filters are offered to give broadband responses in the 825-845 MHz frequencies for cellular radiotelephones.

Each model provides an essentially flat passband with a steep-sloped rejection characteristic to isolate undesired out-of-band frequencies.

Applications

Primarily, the filters are designed to go between a receiver multicoupler and an antenna to prevent intermodulation and receiver desensitization caused by near-by transmitters.

Both DB4193A and DB4193B employ stripline construction using interdigital technology. See charts for frequency responses.

They are designed to provide cellular receive systems with added attenuation of the conventional and trunking transmit bands, also for protection from competing cellular radiotelephone systems in the area.

These filters mount to a flat surface via tabs. If panel mounting is desirable, use the suffix WT after the model number, but before the A or B, to order a panel mounting tray, DB4193WT-B for example.

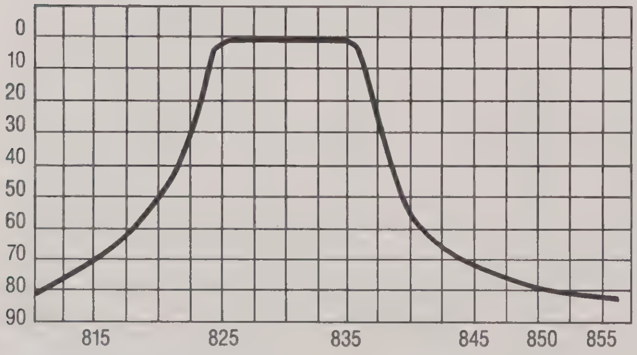
Ordering Information

Please specify exact frequency range. Order DB4193A for 825-835 MHz, DB4193B for 835-845 MHz. Add WT to the model number when ordering a panel mounting tray.

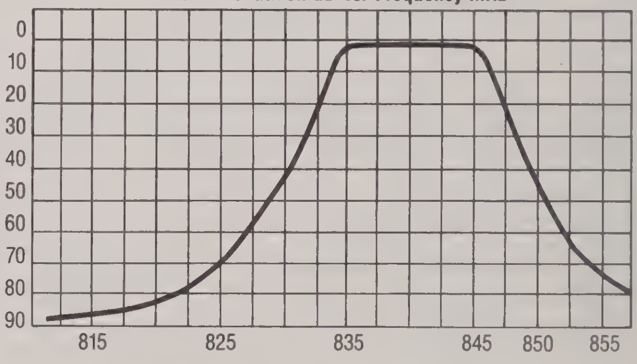
CAN BE SHIPPED UPS.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

DB4193A Attenuation-dB vs. Frequency-MHz



DB4193B Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4193A	DB4193B
Frequency Range — MHz	825-835	835-845
Pass bandwidth — MHz	10	10
Insertion loss — dB	2	2
Return loss	1.5 to 1	1.5 to 1
Attenuation — dB at ± 11 MHz from center pass frequency	>50	>50
Temperature range — C°	−30 to +60	−30 to +60

Mechanical Data

Dimensions (D×W×H) — in. (mm)	5.5 (139.7)×17.75 (450.85)×1.2 (30.48)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	4 (1.81)
Shipping weight — lbs. (kg)	7 (3.18)

DB4090, DB4090S DUPLEXERS
DB4402A, DB4402S 806-960 MHz

DECIBEL

These duplexers are designed for duplex systems and provide 24-45 MHz frequency separation in the 806-960 MHz bands.

DB4090 and DB4402A

These models are ideal for base stations operating in the 806-960 MHz band when separation between transmit and receive is 45 MHz. They provide a band-pass, band reject characteristic with a narrow passband for duplexing single repeaters to a common antenna system.

They use quarter-wave coaxial cavities interconnected with double shielded Teflon dielectric cables. A high quality tunable capacitor is used within each cavity to enhance the bandpass characteristic at the reject frequency.

Each duplexer has two cavities, one in the transmit section and one in the receive. The DB4402 uses a dual junction isolator in the transmit section to achieve additional isolation from other nearby transmitters.

DB4090S and DB4402S

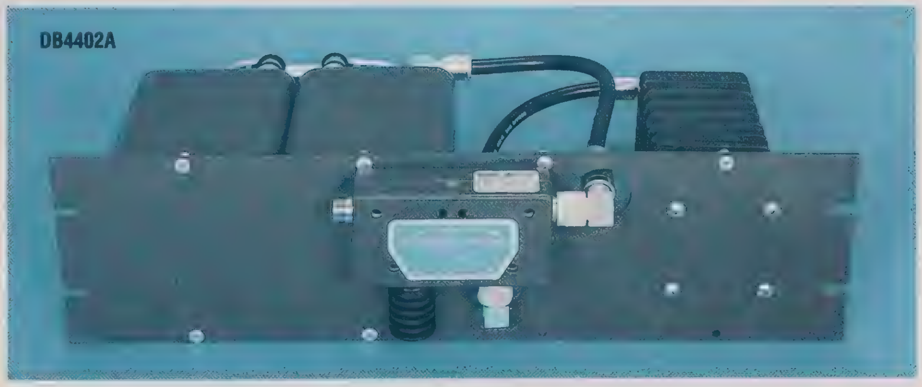
These models are similar to the duplexers above, except that they are modified to perform when transmit-to-receive spacings are as low as 24 MHz. This enables them to be used for 900 MHz links and 800 MHz or 900 MHz trunked systems.

All of the duplexers are tuned at the factory, but can be retuned in the field with proper measuring equipment. They mount in a standard 19″ (482.6 mm) rack.

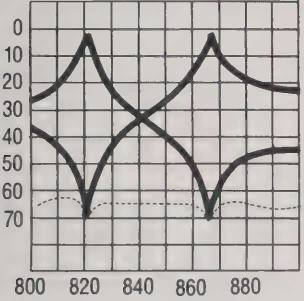
Ordering Information

Please specify exact frequencies of transmitters and receivers.

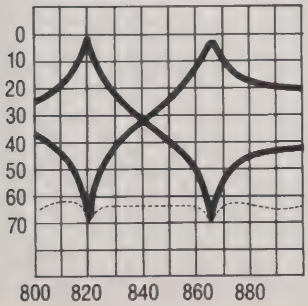
DB4090 Duplexer


DB4402A

DB4090 Attenuation-dB vs. Frequency-MHz



DB4402A Attenuation-dB vs. Frequency-MHz



Electrical Data

	DB4090	DB4402A	DB4090S	DB4402S
Frequency Range — MHz	806-960	806-960	806-960	806-960
Frequency Separation — MHz	45	45	24 or more	24 or more
Maximum power input (continuous duty) — watts	150	150	150	150
Insertion loss — dB				
Tx to Antenna	0.7	1.5	0.7	1.5
Rx to Antenna	0.7	.7	0.7	0.7
Antenna to Tx	N/A	70	N/A	70
Transmitter noise (suppression at receive frequency) — dB	65	65	65	65
Receiver isolation at transmit frequency — dB	65	65	65	65
Isolation (min.) transmitter to receiver at 45 MHz separation — dB	60	65	60	60
Maximum VSWR (reference to 50 ohms)	1.5 to 1	1.25 to 1	1.5 to 1	1.25 to 1
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60
Number of cavity filters	2	2	2	2

Mechanical Data

	DB4090	DB4402A	DB4090S	DB4402S
Dimensions (D×W×H) — in. (mm)	8.25 (209.55)× 19 (482.6)× 5.25 (133.35)	9.25 (234.95)× 19 (482.6)× 5.25 (133.35)	8.25 (209.55)× 19 (482.6)× 5.25 (133.35)	9.25 (234.95)× 19 (482.6)× 5.25 (133.35)
Mounting — in. (mm)	19 (482.6) rack	19 (482.6) rack	19 (482.6) rack	19 (482.6) rack
Connector terminations	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	8 (3.63)	8 (3.63)	8 (3.63)	8 (3.63)
Shipping weight — lbs. (kg)	11 (4.99)	11 (4.99)	11 (4.99)	11 (4.99)

DB4185H
DB4090S-4 DUPLEXERS, CONVENTIONAL AND TRUNKED SYSTEMS, 806-866 and 896-940 MHz

DECIBEL

The DB4185H duplexer is designed for the original 806-866 MHz frequency band. The DB4090S-4 is designed for the new 896-940 MHz trunked frequency band.

The DB4185H provides a broad bandpass characteristic with a 15 MHz passband for both transmit and receive sections of the duplexer. This, plus its isolation, makes it ideal for 800 MHz conventional and trunked multifrequency systems combined to use a single transmission line and a common antenna.

The DB4185H consists of two bandpass, interdigital filters that use stripline design techniques. The transmit section has four finger cavities and provides 45 dB isolation to frequencies 45 MHz from the center of the passband. The receive section, six finger cavities, provides 65 dB isolation to transmit frequencies 45 MHz from the receive passband. Power rating of the transmit section is 300 watts (H).

The DB4090S-4 is a new duplexer for higher frequency trunked systems. The 125 KHz bandwidth of both pass and notch characteristics allow the unit to operate with up to all 10 channels of a 900 MHz system. Transmit is 935-940 MHz and receive 896-901 MHz, with the DB4090S-4 being tunable across these bands. Quarter-wave coaxial cavities are interconnected with double shielded Teflon dielectric cable. A high quality tunable capacitor is used within each cavity to enhance the bandpass, band-reject characteristic by improving the rejection at the undesired frequency. The DB4090S-4 is factory tuned to the exact operating frequencies. If desired, the duplexer can be field-tuned to other frequencies within its design frequency range. Duplex response curves are shown.

Ordering Information

Order DB4185H for 806-866 MHz, DB4090S-4 for 896-940 MHz.

CAN BE SHIPPED UPS.

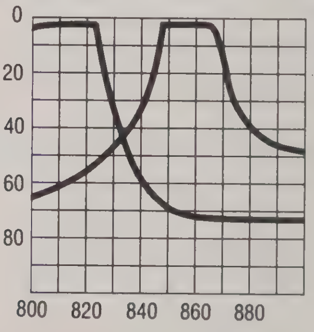
Electrical Data

	DB4090S-4	DB4185H
Frequency Range — MHz	896-940	806-866
Frequency Separation — MHz Tx/Rx	39	45
Frequency Separation — MHz Tx/Tx	0.125	15
Maximum power input (continuous duty) — watts	150	300
Insertion loss — dB		
Tx to Antenna	1.2	0.9 typical
Rx to Antenna	1.2	1.2 typical
Transmitter noise (suppression at receive frequencies) — dB	100	45
Receiver isolation at transmit frequencies — dB	100	65
Isolation (min.) transmitter to receiver at 45 MHz separation — dB	100	45
Maximum VSWR (reference to 50 ohms)	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60
Number of cavity filters	4	4 Finger-Tx Side 6 Finger-Rx Side

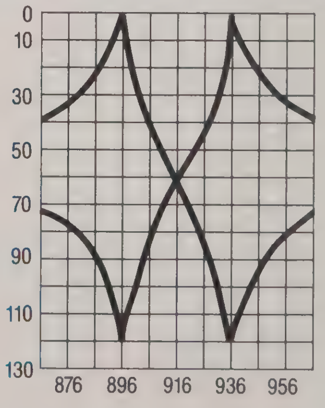
Mechanical Data

	DB4090S-4	DB4185H
Dimensions (D×W×H) — in. (mm)	8.25 (209.55)× 19 (482.6)× 5.25 (133.35)	12 (304.8)× 19 (482.6)× 5.75 (146.05)
Mounting — in. (mm)	19 (482.6) rack	5.75 (146.05) panel tray
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	15 (6.80)	8 (3.63)
Shipping weight — lbs. (kg)	18 (8.17)	11 (4.99)

DB4185H Attenuation-dB vs. Frequency-MHz



DB4090S-4 Attenuation-dB vs. Frequency-MHz



DECIBEL

DB4186 DB4187 CELLULAR SYSTEMS DUPLEXERS 825-890 MHz

The DB4186 Duplexer is a combination of a high power, 300 watts, stripline construction interdigital transmit filter and seven pole interdigital receive SHAPE FACTORED FILTER®. The 16 MHz transmit passband is ideal for cellular telephone operations, with only 0.5 dB nominal insertion loss. The receive side provides cellular systems with added attenuation of conventional and trunked 800/900 MHz transmit bands and protection from competing cellular systems in the area.

The DB4187 duplexer is a combination of a six cavity transmit filter, using aperture coupling, for high power, 600 watts, cellular 20 MHz bandwidths and a seven pole interdigital receive SHAPE FACTORED FILTER for cellular 10 MHz bandwidths.

The transmit side of the DB4187 is constructed of copper and is frequency stable at all power levels to 600 watts. Insertion loss at 15 MHz bandwidth is 1.0 dB and at 20 MHz bandwidth is 0.6 dB. VSWR is 1.25 to 1.

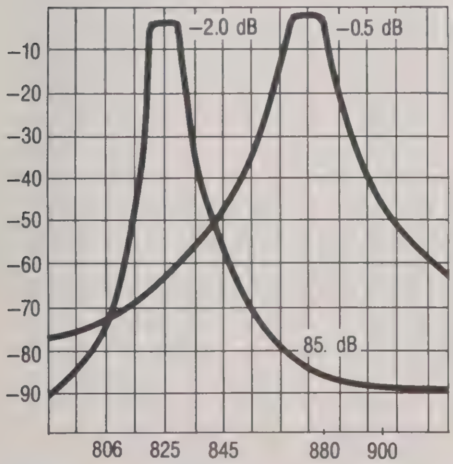
The receive side of the DB4187 is designed to provide cellular systems with added attenuation of conventional and trunked 800/900 MHz transmit bands and protection from competing cellular telephone systems in the area.

The DB4186 and DB4187 duplexers are available for North American and international cellular frequency ranges. As cellular systems expand capacity and a duplexer is used to combine multiple transmitters and receivers on a single antenna, power handling capability of the transmit side becomes very important. These two duplexers offer a choice depending on power requirements.

Ordering Information

Please specify exact frequency range. Order DB4186A or DB4187A for 825-890 MHz frequency range. Order DB4186B or DB4187B for 835-890 MHz frequency range.

DB4186 Insertion loss-dB vs. Frequency-MHz



DB4186 Duplexer

DB4187 Duplexer

Electrical Data

	DB4186	DB4187
Frequency Ranges — MHz	A=Rx 825-890, Tx 835-890 B=Rx 835-845, Tx 880-890	A=Rx 825-890, Tx 835-890 B=Rx 835-845, Tx 870-890
Frequency Separation — MHz	35 or more	35 or more
Maximum power input (continuous duty) — watts	300	600
Insertion loss — dB		
Tx to Antenna	0.8	0.8
Rx to Antenna (at band edge)	2.5	2.5
Transmitter noise (suppression at receive frequency) — dB	60	60
Receiver isolation at transmit frequency — dB	85	85
Isolation (min.) transmitter to receiver at 45 MHz separation — dB	45	50
Maximum VSWR (reference to 50 ohms)	1.5 to 1	1.5 to 1
Temperature range — C°	−30 to +60	−30 to +60
Number of cavity filters — Tx side	4 finger	6 cavity
— Rx side	7 finger	7 finger

Mechanical Data

	DB4186	DB4187
Dimensions (D×W×H) — in. (mm)	12 (304.8)× 19 (482.6)× 5.25 (133.34)	8 (203.2)× 19 (482.6)× 7 (177.8)
Mounting — in. (mm)	5.25 (133.34) panel tray	19 (482.6) rack
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	10 (4.54)	14 (6.35)
Shipping weight — lbs. (kg)	14 (6.35)	20 (9.07)

DB4096 BAND REJECT DUPLEXER 950-960 MHz

DECIBEL

DB4096 is a high performance, compact base station duplexer for 950-960 MHz. Designed for the newest solid state transmitters as well as tube systems, it isolates the receiver from the transmitter and reduces transmitter noise.

The duplexer uses quarter-wave coaxial cavities interconnected in a band reject configuration with double shielded, Teflon dielectric cable. Frequency stability over a wide temperature range is achieved by using an Invar tuning rod - with almost no expansion - in each cavity.

Design and Construction

DB4096 is a 6-cavity duplexer with three cavities for transmit, three for receive. Separation between receive and transmit can be 3.6 MHz or more. When operated at greater separation, rejection will remain the same while transmitter and receiver losses will be less.

The duplexer is tuned at the factory and shipped ready to install. However, it can be retuned in the field to new frequencies within the band. Measuring equipment is required.

The unit can be mounted vertically or horizontally on any flat surface or in a standard 19″ (482.6 mm) rack. A multi-position bracket allows mounting to the front, center or back of the rack.

The transmitter section is adjusted to pass the transmitter carrier signal to the antenna while rejecting the side band noise that occurs at receive frequency.

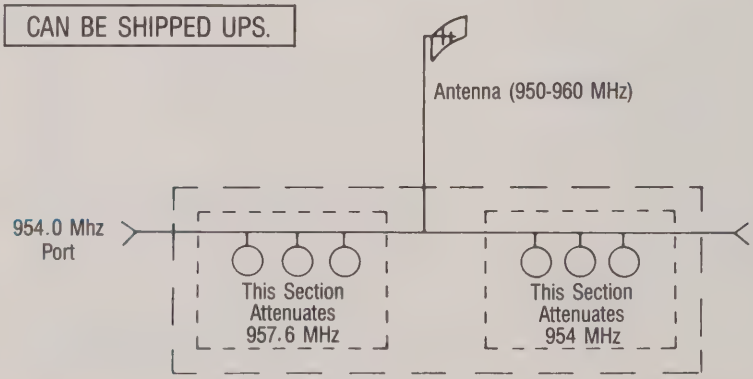
DB4096 Band Reject Duplexer

The receiver section is adjusted to pass the received signal from the antenna to the receiver while rejecting the transmitter carrier which could desensitize the receiver or cause intermodulation interference.

Ordering Information

Please specify exact transmitter and receiver frequencies. Order DB4096 6-cavity duplexer for 950-960 MHz.

CAN BE SHIPPED UPS.


Antenna (950-960 MHz)
954.0 Mhz Port
957.6 MHz Port
This Section Attenuates 957.6 MHz
This Section Attenuates 954 MHz

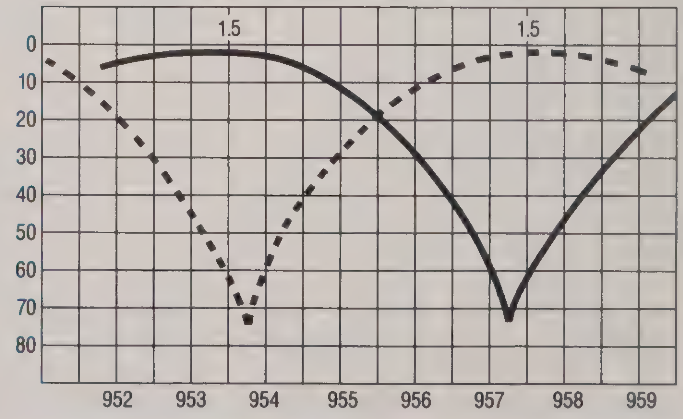
Mechanical Data

Metal enclosure	Rack mount type
Dimensions — in. (mm)	
Height	3.5 (88.9)
Width	19 (482.6)
Depth	6.5 (165.1)
Connector terminations	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	13 (5.9)
Shipping weight — lbs. (kg)	15 (6.8)

Electrical Data

Frequency Range — MHz (other frequency ranges available)	950-960
Frequency separation — MHz	3.6 or more
Maximum power input (continuous duty) — watts	125
Insertion loss, transmitter to antenna, at 3.6 MHz separation — dB	1.5
Insertion loss, receiver to antenna, at 3.6 MHz separation — dB	1.5
Transmitter noise suppression at receive frequency — dB	75
Receiver isolation at transmit frequency — dB	75
Maximum VSWR (referenced to 50 ohms)	1.3 to 1
Temperature range — C°	−30 to +60
Number of cavity filters	6

DB4096 Attenuation-dB vs. Frequency-MHz



DB8980, DB8981 DB8984 TOWER TOP RECEIVER AMPLIFIERS 806-901 MHz, 406-512 MHz Unamplified

DECIBEL

Decibel's tower top amplifiers improve the sensitivity of base station receivers and extend the "talk back" range for low powered transmitters operating in the 806-821 and 896-901 MHz bands.

High gain, low noise amplifiers placed at the antenna terminal overcome the usual transmission line loss that adds to receiver noise and degrades receiver sensitivity.

Design and Construction

DB8980 provides 20 dB gain at the antenna terminals in the 806-821 MHz frequency range. The high gain, low noise amplifier is preceded by a DB4192 SHAPE FACTORED FILTER®. The filter has an essentially flat passband of 15 MHz with high out-of-band rejection characteristics.

DC power is supplied through the transmission line by the use of a bias tee arrangement. A relay within the unit permits switching the amplifier in or out of the circuit, if required.

DB8981 is a DB8980 modfied with a DB4196 SHAPE FACTORED FILTER® to include the new trunking 896-901 MHz receiver frequencies. This unit must be used with a broadband antenna such as the DB803H, DB806H, or DB809H Series and a broadband receiver multicoupler such as the DB8500 Series.

DB8984 is similar to the DB8980 except that, in addition to the 806-821 MHz bands, it couples the 406-512 MHz bands unamplified into the common transmission line.

All amplifiers are factory tuned and shipped in weatherproof enclosures. The power supply is mounted on a 3.5" (88.9 mm) chassis for 19" (482.6 mm) rack mounting.

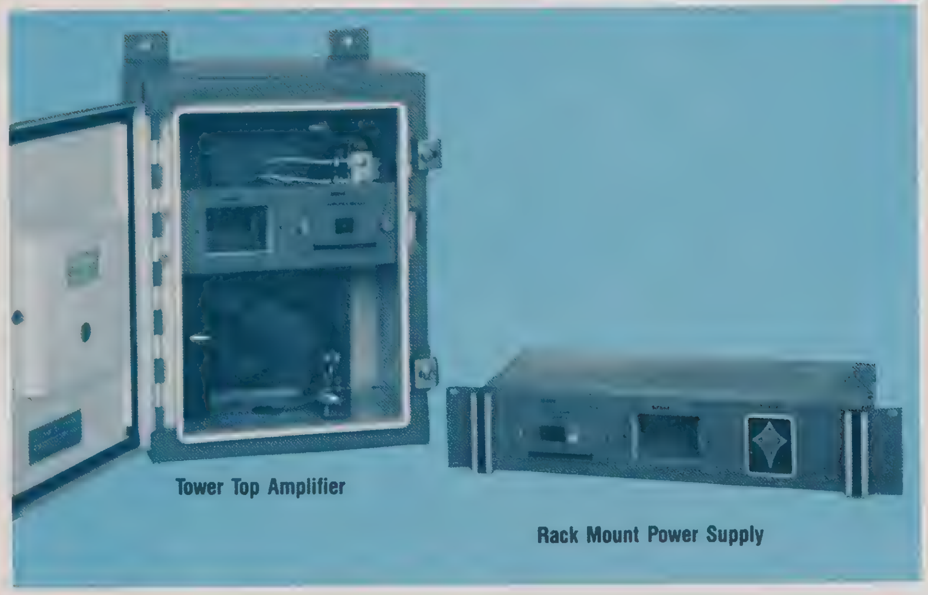
Lightning Protection

Several levels of protection have been incorporated. At antenna coax entry, a shorted quarter-wave stub brings the center conductor and the outer conductor of the coax to the same potential. The center conductor of the preselector filter is also tied to its outer conductor. This insures that any high currents or high voltage differentials at the input will be minimized. To protect the output, gas discharge tubes and high-current Zener diodes are used in the bias tee circuitry.

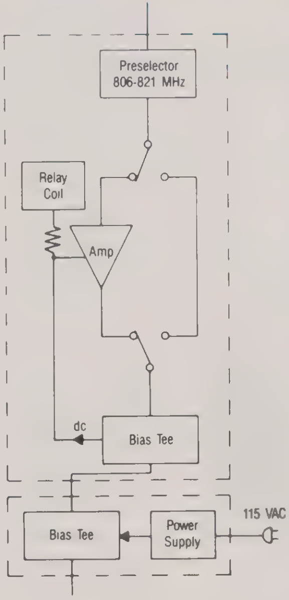
Ordering Information

Please specify frequency. Order DB8980P for 806-821 MHz, DB8984P for 806-821 MHz and 406-512 MHz. Order DB8981P for 806-821 MHz and 896-901 MHz.

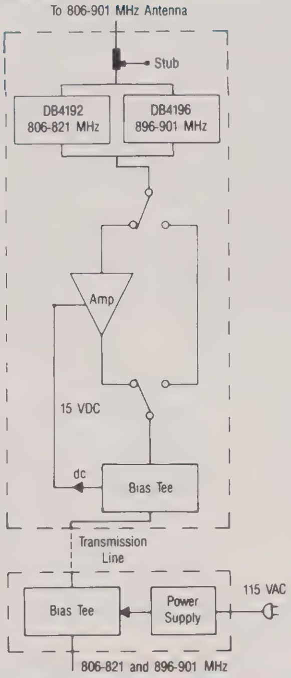
SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.


Tower Top Amplifier
Rack Mount Power Supply

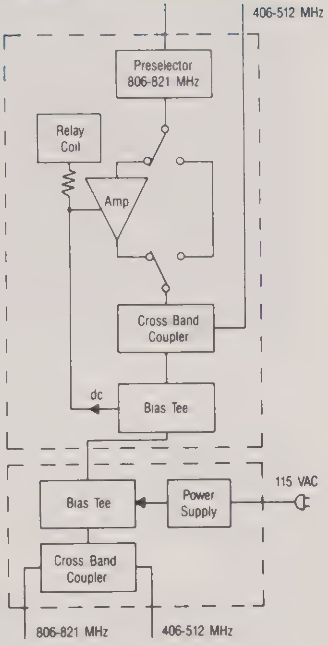
DB8980P


Preselector
806-821 MHz
Relay
Coil
Amp
dc
Bias Tee
Bias Tee
Power
Supply
115 VAC

DB8981P


To 806-901 MHz Antenna
Stub
DB4192
806-821 MHz
DB4196
896-901 MHz
Amp
15 VDC
dc
Bias Tee
Transmission
Line
Bias Tee
Power
Supply
115 VAC
806-821 and 896-901 MHz

DB8984P


406-512 MHz
Preselector
806-821 MHz
Relay
Coil
Amp
Cross Band
Coupler
dc
Bias Tee
Bias Tee
Power
Supply
115 VAC
Cross Band
Coupler
806-821 MHz
406-512 MHz

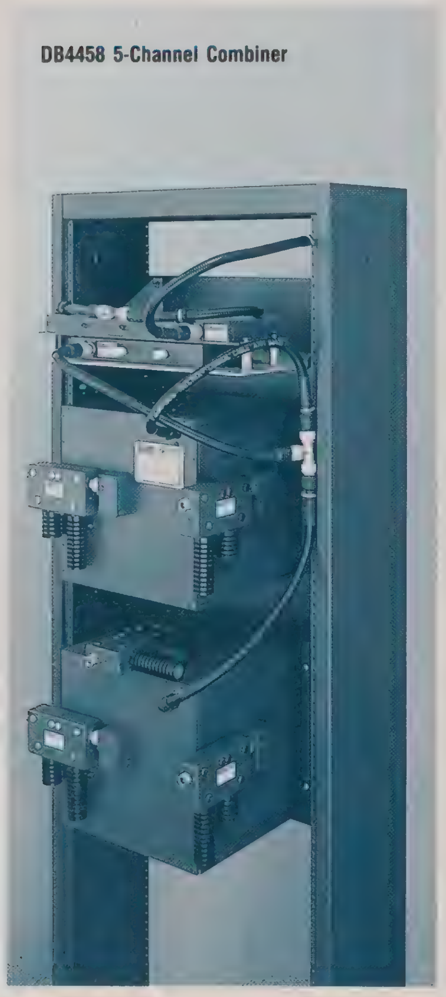
Electrical Data

	DB8980P	DB8981P	DB8984P
Frequency Range — MHz	806-821	806-821, 896-901	806-821, 406-512
Gain (minimum) — dB	20	20	20 at 800 MHz, 0 at 400 MHz
Noise figure — dB	3.5	5.5	3.5
3rd Order intercept point — dBm	+35	+35	+35
Temperature range — C°	−40 to +70	−40 to +70	−40 to +70
Power — VAC	115	115	115

Mechanical Data

Dimensions (top enclosure) — in. (mm)	
DB8980 and DB8981	16 (406.4) × 12 (304.8) × 10 (254)
DB8984	20 (508) × 16 (406.4) × 12 (304.8) deep
Dimensions (bottom panel) — in. (mm)	3.5 (88.9) × 19 (482.6) × 10 (254)
Connectors	N-Female
Finish	Decibel Tek Black™

DB4458 DB4483 CUBE COMBINER 850-870 MHz



DB4458 5-Channel Combiner

Three models are offered to combine 3, 5 or 10 transmitters to the same antenna in the 850-870 MHz bands.

All three use the CUBE FILTER®, which is a unique filter utilizing waveguide technology. The filter, with its low loss characteristic and patented temperature compensating device, is well suited for as close as 500 KHz frequency operation.

DB4642-2 Series dual stage ferrite isolators with 30 and 60 watt load terminations assure the best balance of insertion loss vs. isolation.

Design and Construction

The DB4483 combines three channels in a single cube without the use of cables. It comes complete on a panel, ready for mounting in a 19″ (482.6 mm) open rack.

The DB4458 is a 5-channel combiner with two cubes mounted on panels ready for mounting in a 19″ (482.6 mm) open rack. It can be expanded to a 10-channel combiner in the field.

The DB4458-2 is a 10-channel combiner with four cubes mounted on panels ready for mounting in a 19″ (482.6 mm) open rack.

Extra room in the DB4458 and DB4458-2 racks permits the inclusion of receiver multicoupler and power monitoring equipment.

All models are tuned at the factory and shipped ready for transmitter and antenna connections.

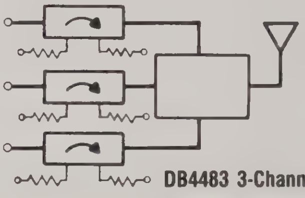
CUBE FILTER is a registered trademark of Decibel Products, Inc.

Accessories

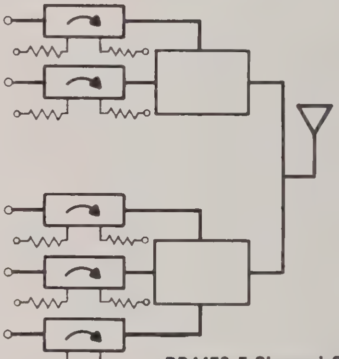
Decibel's family of Sentry 8000 monitors is available to report status and alarm conditions of station equipment, transmission lines and antennas, conveniently and cost effectively.

Ordering Information

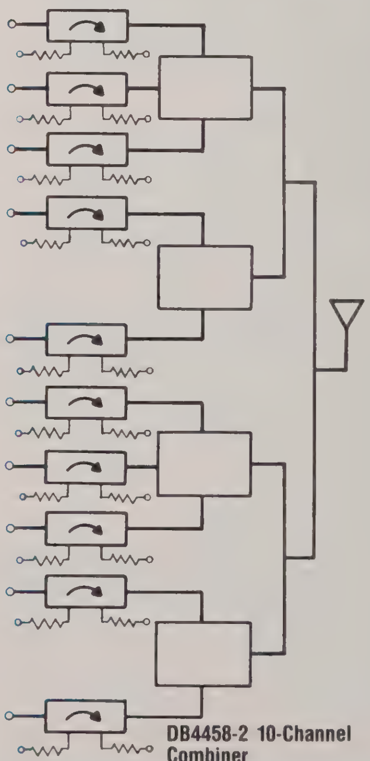
Please specify the frequency of each channel. Order DB4482 for a 2-channel expansion, DB4483 for a 3-channel, DB4458 for 5-channel and DB4458-2 for 10-channel combiner. For rack mounted shipment, order DB70 open rack 6′×19″ (1.8×.48 m).



DB4483 3-Channel Combiner



DB4458 5-Channel Combiner



DB4458-2 10-Channel Combiner

Electrical Data

	DB4483	DB4458	DB4458-2
Frequency Range — MHz	850-870	851-870	851-870
Frequency Spacing — KHz	500	500	500
Isolation (min. at 1 MHz) — dB			
Tx to Tx	75	75	75
Antenna to Tx	70	70	70
Tx to Rx (45 MHz)	45	—	—
Insertion loss — dB			
(5-channel at 1 MHz spacing)	—	2.0 typical (2.2 max.)	—
(10-channel at 500 KHz spacing)	—	3.3 typical (3.6 max.)	3.3
Attenuation: Harmonics and intermod products (min.) — dB	75	75	75
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60
Maximum input VSWR	1.25 to 1	1.25 to 1	1.25 to 1
Maximum power input (each channel) — watts	150	150	150

Mechanical Data

	DB4483	DB4458	DB4458-2
Dimensions (D×W×H) — in. (mm)	14 (355.6)× 15 (381)× 19 (482.6)	14 (355.6)× 19 (482.6)× 28.5 (723.9)	14 (355.6)× 19 (482.6)× 57 (1,447.8)
Mounting — in. (mm)	14 (355.6) of 19 (482.6) rack space	19 (482.6) rack mount	19 (482.6) rack mount
Connector terminations	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	32 (14.51)	66 (29.94)	136 (61.69)
Shipping weight — lbs. (kg)	55 (24.95)	90 (40.82)	165 (74.84)

DB8060 MULTICHANNEL TRANSMITTER COMBINER, 850-960 MHz

DECIBEL

The DB8060 combines 2 to 20 transmitters as closely spaced as 250 KHz, with low loss and minimum insertion loss, for conventional, trunked or cellular frequencies.

Field expandable, it uses a building block approach for system expansion up to 20 transmitters on a single antenna. Each channel handles up to 150 watts continuous input power.

Design and Construction

The DB8060 uses high Q three-quarter-wave cavities with half-inch (12.7 mm) low loss superflexible HELIAX® interconnecting and phasing cables, plus a uniquely designed constant impedance multi-junction connector.

Each cavity is 5×7×12 inches (127×177.8×304.8 mm) and is made of copper. It is temperature compensated and used in a bandpass configuration with silver-plated N-Female connectors. A dual junction isolator with 30 watt load at input and 60 watt at reflected port is connected to each cavity input port.

The cavity-isolator combination provides maximum transmitter-to-transmitter isolation. The high Q characteristic of the cavity provides a minimum rejection of 45 dB at receiver frequencies 45 MHz removed from the cavity's center frequency.

The basic building block is two cavities and two dual junction isolators with 30 and 60-watt loads interconnected on a 19″ (482.6 mm) panel. However, odd numbered combiners are available to combine 3, 5, 7, etc., channels. All combiners mount in 19″ (482.6 mm) racks.

The combiners are factory tuned and shipped with performance data at the operating frequencies specified in each order. The combiners can be retuned in the field with appropriate equipment.

Accessories

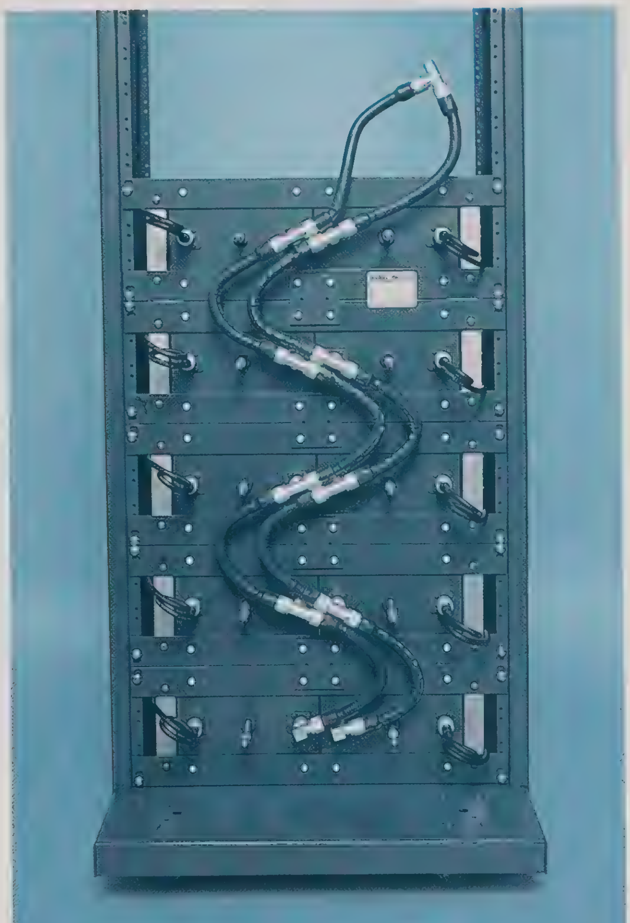
The DB8060 can be used in conjunction with power sensors and Sentry™ monitoring equipment. Other performance improvement accessories offered by Decibel include Z-matchers, transmit SHAPE FACTORED FILTERS® and multi-channel receiver multicouplers.

Decibel's family of Sentry 8000 monitors is available to report status and alarm conditions of station equipment, transmission lines and antennas, conveniently and cost effectively.

Ordering Information

Please specify exact frequencies for each channel. Order DB8060-2 for a two-channel combiner or, for larger configurations, change the −2 to the number of channels desired, −3, −4, −5 and so on up to 20 channels. For rack mounted shipment, order DB70 open rack, 6′×19″ (1.83×.482 m).

HELIAX is a registered trademark of Andrew Corp.
SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.



DB8060 20-Channel Combiner

Electrical Data

Frequency Ranges — MHz	A = 850-890, B = 935-960
Isolation	See chart
Insertion loss	See chart
Temperature range — C°	−30 to +60
Maximum input VSWR	1.3 to 1
Maximum power input — watts	150

Mechanical Data

	4-Channel
Dimensions (D×W×H) — in. (mm)	16 (406.4)×19 (482.6)×12.25 (311.15)
Mounting — in. (mm)	19 (482.6) rack
Connector termination	N-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	43 (19.5)
Shipping weight — lbs. (kg)	54 (24.49)

Separation — MHz

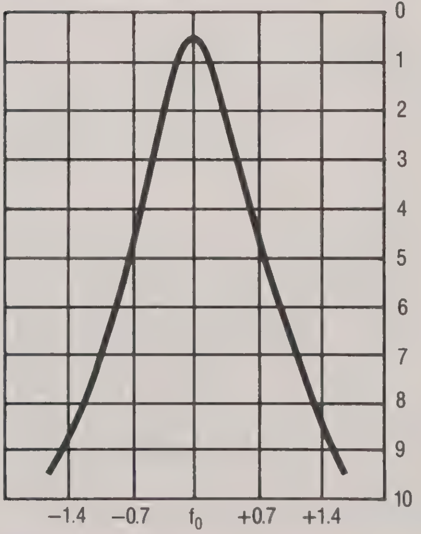
Number Channels	Insertion Loss				Isolation				Channel Configuration
	.250	.500	.600	1.0	.250	.500	.600	1.0	
3 or 4	3.5	2.5	2.4	2.0	78	80	80	84	cavity with dual junction isolator
5	3.7	2.5	2.4	2.0	78	80	80	84	
8	4.0	2.7	2.6	2.2	78	80	80	84	
10	4.2	2.7	2.6	2.2	78	80	80	84	
12	4.3	3.1	3.0	2.6	78	80	80	84	
16	4.6	3.3	3.2	N/A	78	80	80	84	
20	4.8	3.7	N/A	N/A	78	80	80	84	

DB8061WB-E, DB8060WB-E DB8061HWB-E STAND-ALONE OR ADD-ON PAGING PANEL 927-932 MHz

DB8061WB-E - DB8060WB-E Add-On Paging Panel

These panels are designed to permit system operators to include isolator/cavity protection to a stand-alone paging transmitter or to add a 900 MHz paging system to an existing transmitter or transmitter combining system that is already in place. The addition of the paging panel adds less than .5 dB loss to the original system.

Loss-dB vs. Frequency-MHz



The DB8061WB-E has a single junction isolator and is rated at 150 watts. The DB8060WB-E has a dual isolator and is rated at 150 watts. DB8061HWB-E has a single junction high power isolator and is rated at 350 watts.

For example, a conventional, trunked or cellular system can be expanded to handle 900 MHz paging frequencies by using this unique filter. The antenna must have a suitable bandwidth, of course, such as that provided by the DB809K.

Design and Construction

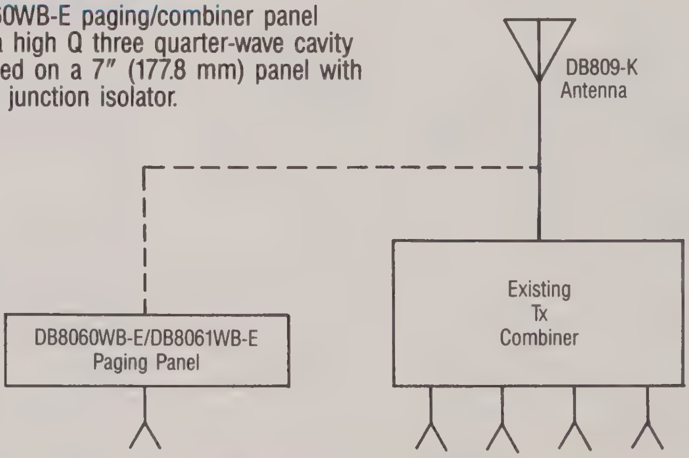
DB8060WB-E paging/combiner panel uses a high Q three quarter-wave cavity mounted on a 7″ (177.8 mm) panel with a dual junction isolator.

The DB8061WB-E panel is similar to the DB8060WB-E. It uses a single junction isolator and is suitable for applications that require less transmitter-to-transmitter isolation.

The panels are tuned at the factory and are shipped ready for use. Installation in the field is fast and simple.

Ordering Information

Please specify operating frequencies. Order DB8061WB-E, DB8061HWB-E or DB8060WB-E to suit your requirements.



Electrical Data

	DB8061HWB-E	DB8061WB-E	DB8060WB-E
Frequency Range — MHz	935-960	935-960	935-960
Insertion loss — dB	1.0	1.0	1.2
Bridging loss (in combined systems) — dB	0.3	0.3	0.3
Isolation — dB Antenna to Tx	35	35	70
Power rating — watts	350	150	150

Mechanical Data

	Low Power	High Power
Dimensions (H×W×L) — in. (mm)	7 (177.8)× 19 (482.6)× 12 (304.8)	7 (177.8)× 19 (482.6)× 12 (304.8)
Connector terminations	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	8 (3.63)	11 (4.99)
Shipping weight — lbs. (kg)	12 (5.44)	15 (6.81)

DB8080 CERAMIC TRANSMITTER COMBINERS 870-894 MHz

The DB8080 uses new ceramic High Q, Dielectric Resonator Cells™ to combine from 4 to 16 transmitters on the same antenna in the 851-866 MHz trunking or 870-894 MHz U.S. and international cellular frequencies.

Stripline phasing techniques, used to interconnect the cells, eliminate potential mismatches and reduce cable assembly requirements and routine maintenance.

8 Times Smaller

Individual ceramic dielectric cells are 3.875×4.5″ (98.43×114.3 mm), about 8 times smaller than air dielectric cavities. A 16 channel combiner uses less than half the vertical rack space.

DB8080-8 8-Channel Expansion Model

The ceramic cells — with a large dielectric constant of 37 — have excellent frequency stability and permit Tx to Tx stacking to 600 KHz or closer. In the DB8080 Series, the cells allow tuning access and easy expansion to accommodate systems growth.

With or Without Isolators

The DB8080 is offered in three configurations — either without isolators, or with single or dual junction isolators in each channel.

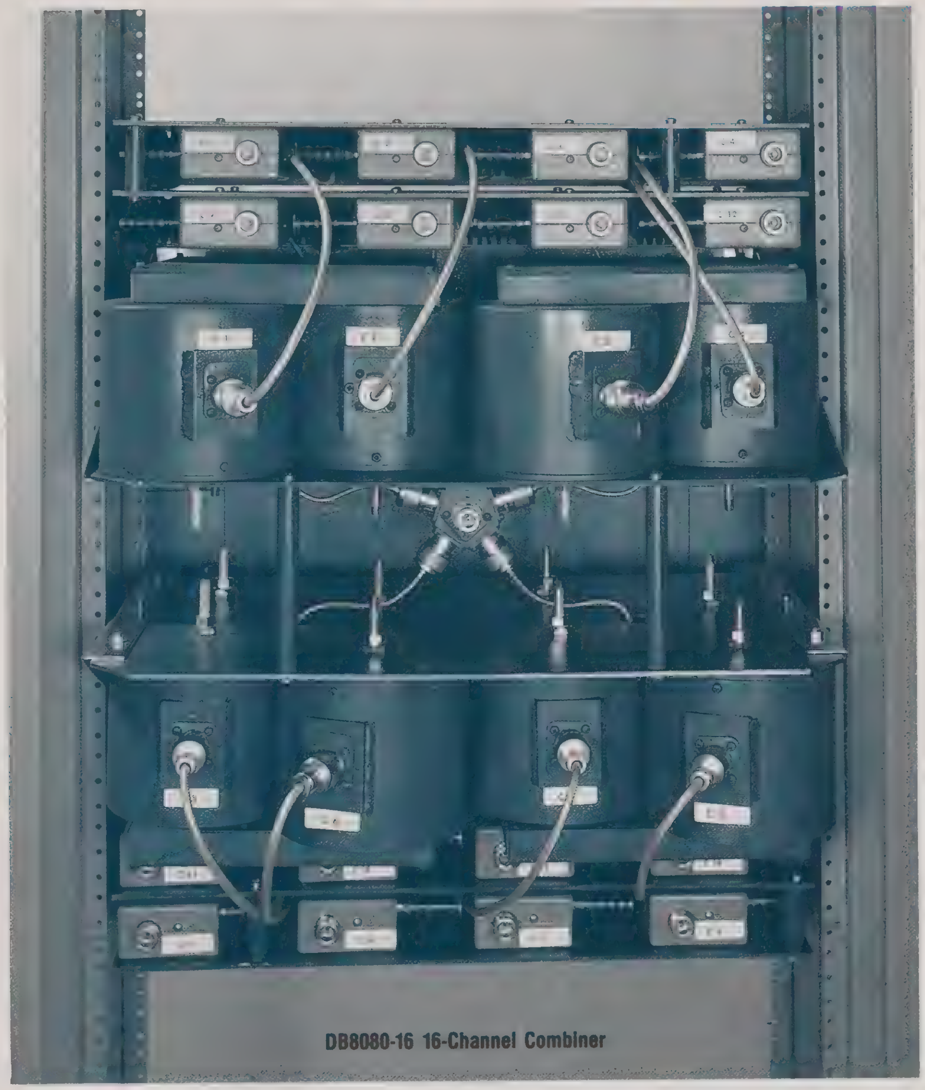
Single junction isolators have a 0.2 dB typical pass loss with 30 dB reverse isolation. Dual junction isolators have a 0.4 dB pass loss with 75 dB minimum reverse isolation.

A system is expandable in 4-cell or 8-cell increments from 4 to 16 channels, also in special configurations. Four or eight cell units mount in 7″ (177.8 mm) of vertical rack space, while 12 to 16 channels require just 14″ (355.6 mm) of 19″ (482.6 mm) space.

DB8080 systems are tuned at the factory, but can be retuned in the field with appropriate measuring equipment. Performance data and installing and retuning instructions are supplied.

Ordering Information

Please specify exact frequency for each channel. Order DB8080-4 for 4 channel, DB8080-8 for 8 channel, DB8080-12 for 12 channel, and DB8080-16 for 16 channel combiner. Consult Systems Engineering for special configurations.



DB8080-16 16-Channel Combiner

Specifications 600 KHz Tx-Tx Separation

Model	DB8080-4 4-Channel	DB8080-5 5-Channel	DB8080-8 8-Channel	DB8080-12 12-Channel	DB8080-16 16-Channel
Frequency Range (cellular) — MHz	870-894	870-894	870-894	870-894	870-894
Trunking (Consult Engineering)	851-866	851-866	851-866	851-866	851-866
Isolation (Tx to Tx) — dB					
Without isolators	16	16	16	16	16
With single isolators	45	45	45	45	45
With dual isolators	75	75	75	75	75
Isolation (Antenna to Tx) — dB					
Without isolators	14	14	14	14	14
With single isolators	40	40	40	40	40
With dual isolators	70	70	70	70	70
Insertion loss (per channel) — dB	1.6*	1.7*	2.0*	2.2*	2.5*
Power input (per channel) — watts	50	50	50	50	50
Channel separation (minimum) — KHz	600	600	600	600	600
Input/output VSWR	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1
Temperature range — C°	-10 to +60	-10 to +60	-10 to +60	-10 to +60	-10 to +60
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Dimensions (H×W×D) — in. (mm)	7 (177.8)× 19 (482.6)× 14 (355.6) Note A	7 (177.8)× 19 (482.6)× 14 (355.6) Note A	7 (177.8)× 19 (482.6)× 14 (355.6) Note A	14 (355.6)× 19 (482.6)× 14 (355.6) Note B	14 (355.6)× 19 (482.6)× 14 (355.6) Note B

*Add 0.3 dB for single junction isolator, including cables. Add 0.5 dB for dual junction isolator, including cables.

NOTE A: Add 3.5″ (88.9 mm) to height dimension when isolators are used.

NOTE B: Add 7″ (177.8 mm) to height dimension when isolators are used.

DB4391/4 SERIES OF HYBRID Tx COMBINERS 806-1000 MHz

DECIBEL

Operating in the 806-1000 MHz frequencies, these units are designed to combine two or four transmitters that have little or no Tx to Tx frequency separation.

Twelve models are offered, all with tunable hybrids designed to be tuned to the antenna system for optimum performance. A standard 19″ (482.6 mm) open relay rack is recommended to assure adequate ventilation.

Design and Construction

DB4392-2 combines the outputs of two medium power transmitters to a common antenna. It consists of a hybrid and 100 watt, 50 ohm load, two dual stage ferrite isolators with 30 and 60 watt, 50 ohm loads and two harmonic filters. Sub-band tunable isolators are used to give best performance.

DB4394-2 combines the outputs of two 350 watt transmitters on one antenna. It consists of a hybrid and 300 watt, 50 ohm load, two broad-band dual stage isolators with external 50 watt, 50 ohm loads and two harmonic filters.

DB4395 hybrid coupling panel can expand two DB4392-2 or DB4394-2 two-channel combiners into a 4-channel unit. Three panels and four 2-channel combiners make up an 8-channel transmitter combiner. Each panel consists of a hybrid and a 100 watt, 50 ohm load.

DB4396 hybrid coupling panel consists of a hybrid and a 300 watt, 50 ohm load. Used with the DB4394-2 2-transmitter combiner, it can expand to an 8-channel 350-watt transmitter combiner.

All of these combiners comply with FCC regulations for spurious energy. The DB4392-2 and DB4394-4 combiners perform much better than FCC requirements and are recommended when intermodulation occurs on an adjacent transmitter channel or on a nearby frequency. Also, they are recommended for congested sites because they suppress transmitter intermodulation resulting from nearby transmitters.

Ordering Information

Specify the frequency of each channel. Order by model number — see specifications. The 11607 18″ (457.2 mm) and 11608 36″ (914.4 mm) RG-142/U Interconnect Cables with N-Male connectors are optional. Four channel models have a −4 suffix. Five channel models have a −5 suffix and use the unique new DB4399 five-channel hybrid to combine the five transmitters.

DB4392-4 Hybrid Combiner

Electrical Data

	DB4391-2	DB4391-4	DB4392-2	DB4392-4	DB4393-2
Frequency Ranges* — MHz	806-1000	806-1000	806-1000	806-1000	806-1000
Isolation — dB					
Tx to Tx	70	70	100	100	70
Antenna to Tx	33	33	70	70	33
Insertion loss (maximum) — dB	4.2	7.2	4.7	7.7	4.2
Attenuation (minimum) — dB					
Intermod products	70	70	100	100	70
Second harmonic	65	65	65	65	65
Maximum power input (per channel) — watts	125	125	150	150	350
Input VSWR (maximum reference to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	4	4	4	4	10
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

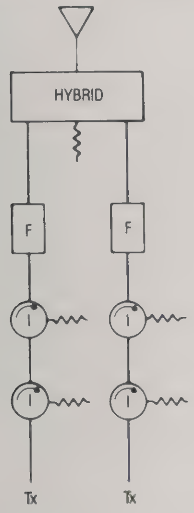
*The field tuning range is approximately ± 10 MHz about the center frequency in the 118-148 MHz band.

Mechanical Data

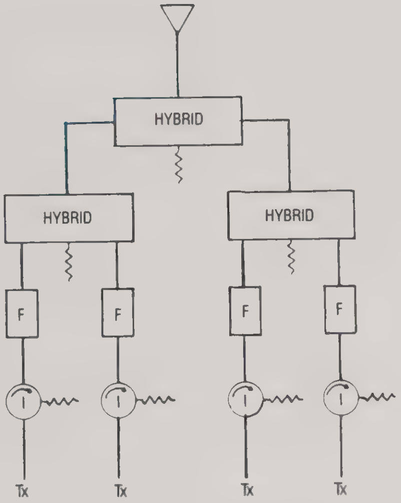
	DB4391-2	DB4391-4	DB4392-2	DB4392-4	DB4393-2
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 5.25 (133.35)× 12.5 (317.5)	19 (482.6)× 15.75 (400.1)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	15 (6.8)	39.75 (18.03)	17.5 (7.94)	44.75 (20.30)	38.25 (17.35)
Shipping weight — lbs. (kg)	20.5 (9.3)	45 (20.41)	23 (10.43)	50 (22.68)	44 (19.96)

DB4391/4 SERIES OF HYBRID Tx COMBINERS CONTINUED

Transmitter Combiner Systems

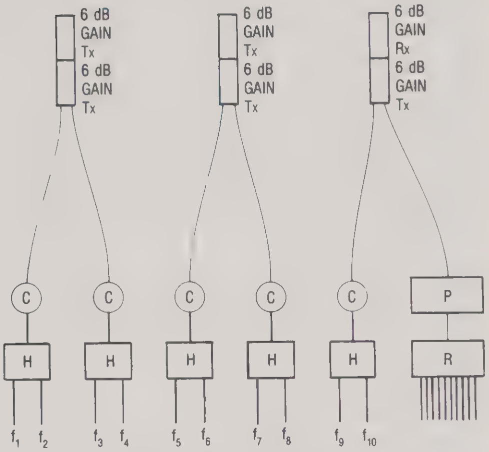


Two-transmitter combiner with hybrid, harmonic filters (F) and isolators (I) as supplied in Model DB4392-2 and Model DB4394-2.



Four-transmitter combiners showing use of third hybrid and 11607 or 11608 interconnect cable to combine outputs of two dual-Tx combiners.

896 MHz Trunking, 5.28 dB Loss System
12.5 KHz Tx/Tx Separation



DB806D Dual Antennas*
Tx 806-910 MHz, Rx 851-960 MHz

C — High Q Cavity for Tx Noise Suppression
H — Two Channel Hybrid Tx Combiner
P — Rx Preselector 896-901 MHz
R — Rx Multicoupler
f_1 thru f_{10} Ascending in 12.5 KHz Steps

*Two DB806T triple antennas can be used, also a 5.28 dB loss system

Electrical Data

	DB4393-4	DB4394-2	DB4394-4	DB4392-5	DB4394-5	DB4395	DB4396
Frequency Ranges* — MHz	806-1000	806-1000	806-1000	806-1000	806-1000	806-1000	806-1000
Isolation — dB							
Tx to Tx	70	100	100	100+	100	40	40
Antenna to Tx	33	65	65	75	75	3.2	3.2
Insertion loss (maximum) — dB	7.2	4.7	7.7	7.5	7.5	3.2	3.2
Attenuation (minimum) — dB							
Intermod products	70	100	100	100	100	40	40
Second harmonic	65	65	65	65	65	N/A	N/A
Maximum power input (per channel) — watts	350	350	350	125	300	100	300
Input VSWR (maximum reference to 50 ohms)	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1	1.25 to 1
Maximum Tx to Tx frequency separation — MHz	10	10	10	6	10	10	10
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

*The field tuning range is approximately ±10 MHz about the center frequency in the 118-148 MHz band.

Mechanical Data

	DB4393-4	DB4394-2	DB4394-4	DB4392-5	DB4394-5	DB4395	DB4396
Dimensions (W×H×D) — in. (mm)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 8.75 (222.25)× 12.5 (317.5)	19 (482.6)× 22.75 (577.85)× 12.5 (317.5)	19 (482.6)× 8.375 (212.73)× 12.5 (317.5)	Customized	19 (482.6)× 5.25 (133.35)× 4.50 (114.3)	19 (482.6)× 8.375 (212.73)× 7 (117.8)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female	N-Female
Finish	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™	Decibel Tek Black™
Net weight — lbs. (kg)	90.5 (41.05)	57.75 (26.19)	129.5 (58.74)	40.5 (18.37)	Customized	8 (3.63)	12.25 (5.57)
Shipping weight — lbs. (kg)	96 (43.54)	63.25 (28.69)	135 (61.22)	56 (25.4)	Customized	12 (5.44)	17 (7.71)

ACCESSORIES FOR TRANSMITTER COMBINERS, 806-960 MHz

DECIBEL

DB4399 Hybrid Coupler

DB4304-B 300 Watt Load

DB4309 Hybrid Coupler

DB4340 Z-Matcher

DECIBEL
Z-MATCHER

DB4303-A 100 Watt Load

DB4333 Harmonic Filter

DB4602 50 Watt Load

DB4601 25 Watt Load

Hybrid Coupler

DB4309 combines transmitters in the 806-960 MHz bands. An external resistive load capable of dissipating half the power of both transmitters must be connected to the load port. With a matched antenna load and a matched resistive load, the hybrid will provide over 40 dB isolation between the transmitters connected to the input ports.

The tunable L.C. network at the antenna output port allow the hybrid to be matched to a slightly mismatched antenna system with a VSWR of up to 1.5 to 1. If the VSWR changes and the hybrid is not retuned, isolation will deteriorate as shown on the curve.

Z-Matcher

DB4340 is offered for 806-960 MHz. It allows transmitters to operate at maximum efficiency by matching the source impedance (transmitter output impedance) to the load impedance (antenna, duplexer, isolator, etc.).

Harmonic Filter

DB4333 is a small, efficient, low pass harmonic filter for 806-960 MHz. For proper intermodulation protection, most systems require this type of filter between the isolator and antenna (or hybrid) to reject second and third harmonic transmitter energy.

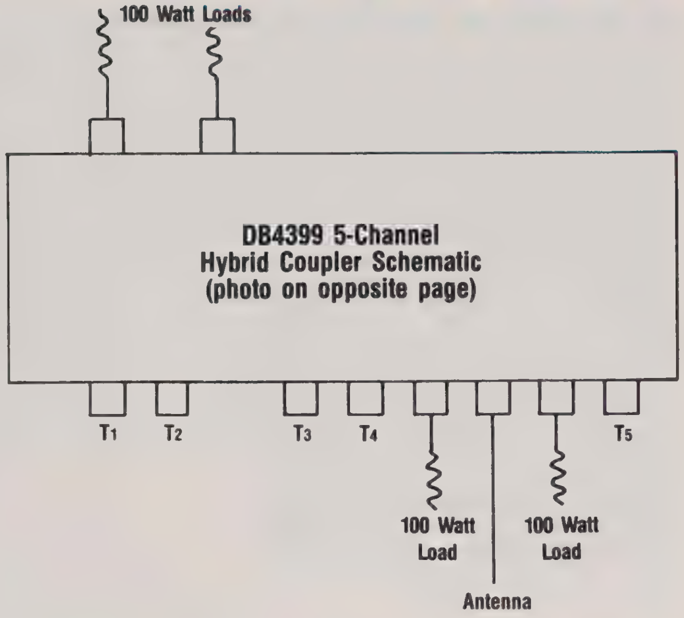
Terminations

These absorption type coaxial load resistors provide the stable 50 ohm termination and extremely low VSWR required by hybrids and circulators/isolators. Four models are offered. The 25, 50, 100 and 300 watt loads are dry (air) dielectric units that can be mounted in any position.

ACCESSORIES CONTINUED

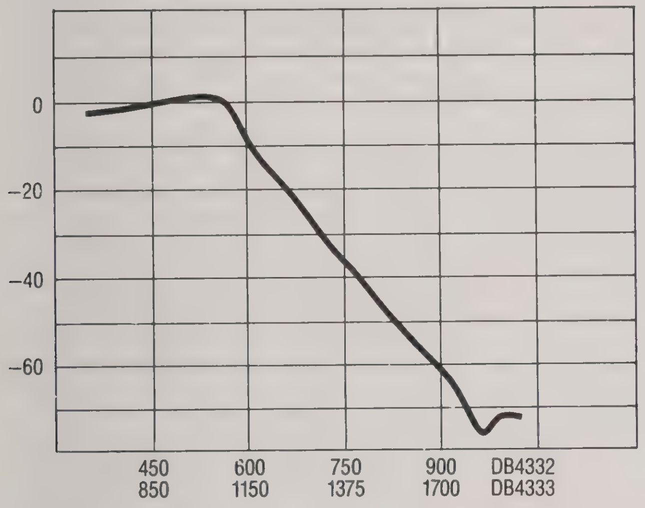
Ordering Information

Please specify model number and frequency or range.
DB4309 Hybrid Coupler 806-870 or 870-960 MHz
DB4340 Z-Matcher 806-960 MHz
DB4333 Harmonic Filter 806-870 or 870-960 MHz
DB4301 25 watt, 50 ohm load N-Male
DB4302 50 watt, 50 ohm load N-Male
DB4303-A 100 watt, 50 ohm load N-Male
DB4304-B 300 watt, 50 ohm load N-Female
DB4399 5-Channel Hybrid Coupler 935-940 MHz

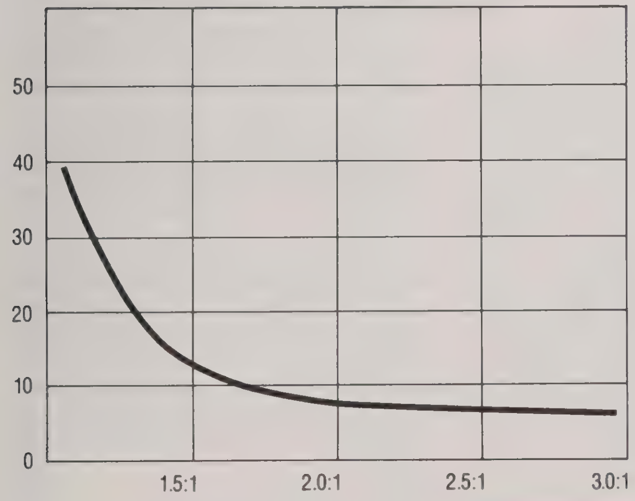


DB4399 5-Channel Hybrid Coupler Schematic (photo on opposite page)

Harmonic Filter
Attenuation-dB vs. Frequency-MHz



Hybrid Couplers
Isolation-dB vs. VSWR at Output (Antenna)



Z-Matchers

Frequency Range (DB4340) — MHz	806-960
Maximum power input — watts	300
Connectors	N-Female
Dimensions (D×W×H) — in. (mm)	1.375 (34.93)×2.25 (57.15) ×1.125 (28.575)

Hybrid Couplers

Frequency Ranges (DB4309) — MHz	806-870, 870-960
Isolation (with matched 50 ohm antenna load) — dB	40
Insertion loss — dB	
Typical	3.2
Maximum	3.4
Frequency separation (maximum) Tx to Tx — MHz	4
Maximum power input (each channel) — watts	300
Temperature range — C°	−30 to +60
Connectors	N-Female
Dimensions (excluding connectors) DB4309 — in. (mm)	7.125 (180.98)× 3.25 (82.55)×1 (25.4)

Harmonic Filters

Frequency Ranges (DB4333) passband — MHz	806-870, 870-960
Attenuation (at second and third harmonic) — dB	60
VSWR (maximum referenced to 50 ohms)	1.25 to 1
Maximum power input — watts	300
Temperature range — C°	−30 to +60
Connectors	Type N
Dimensions (excluding connectors) — in. (mm)	1.25 (31.75)× 1.375 (34.93)×2.25 (57.15)

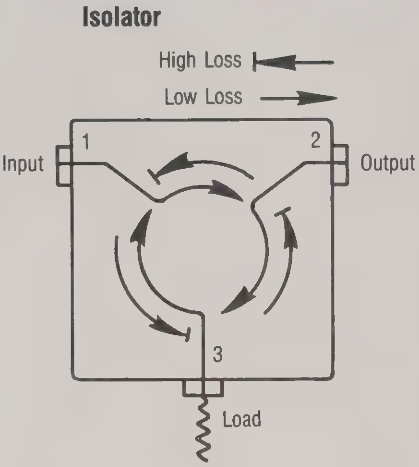
Terminations (Loads)

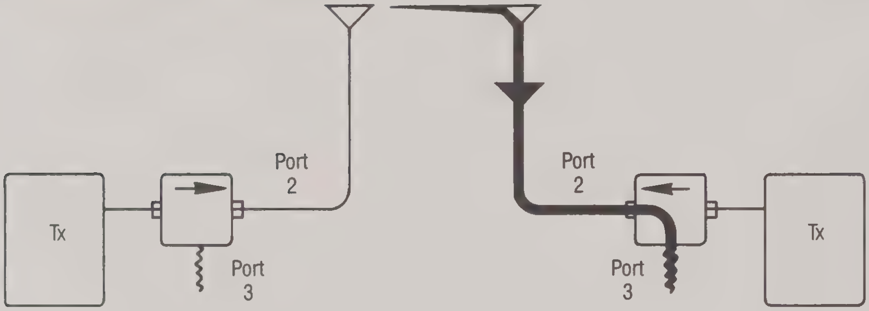
	DB4601	DB4602	DB4303-A	DB4304-B
Maximum power input (at 40°C) — watts	25	50	100	300
Nominal impedance — ohms	50	50	50	50
VSWR (up to 1.0 GHz)	1.1 to 1	1.1 to 1	1.1 to 1	1.1 to 1
Connector	N-Male	N-Male	N-Male	N-Female
Dimensions — in. (mm)	1.25 (31.75)× 1 (25.4)	1.25 (31.75)× 3 (76.2)	7.437 (188.9) ×3 (76.2) ×3 (76.2)	5 (127) ×8 (203.2) ×10 (254)

DB4641/5 SERIES OF SINGLE STAGE FERRITE ISOLATORS, 806-960 MHz

DECIBEL

Single Ferrite Isolator





Electrical Data					
	DB4641-1A	DB4642-1A	DB4643-1A	DB4644-1A	DB4645-1A
Frequency Range — MHz	806-850	850-870	869-895	895-928	928-960
Bandwidth — MHz	10	10	10	10	10
Isolation loss — dB					
Center frequency	35	35	35	35	35
Minimum	30	30	30	30	30
Insertion loss — dB					
Center frequency	.3	.3	.3	.3	.3
Maximum	.4	.4	.4	.4	.4
VSWR (maximum) (referenced to 50 ohms)	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1
Power handling — watts					
Maximum input	150	150	150	150	100
Maximum reflected	30	30	30	30	200

Mechanical Data					
	DB4641-1A	DB4642-1A	DB4643-1A	DB4644-1A	DB4645-1A
Dimensions — in. (mm)					
Including connectors and load termination					
Height	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)
Width	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)	3.625 (92.1)
Length	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)	4.125 (104.8)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

Decibel's ferrite isolator is a circulator with a port terminated in a 30 watt load.

A circulator is a 3-port nonreciprocal device that consists of ferrite material, magnets and three short lengths of transmission line terminated at a common junction.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 1.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 30-35 dB or more.

Sub-band optimized isolators provide the best possible balance of insertion loss vs. isolation because of a fine tuning feature.

A 30 watt load, the DB4601, is used on the DB4600 series isolators to absorb the reflected transmitter power and dissipate the heat generated.

Applications

The ferrite isolator is the most effective solution to transmitter produced intermodulation — short of relocating transmitters — when the frequency separation between the desired and undesired signals is extremely close.

With its broad bandwidth, the isolator is equally suitable when frequency separation is 0 KHz to 4 MHz. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 30-35 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antenna by another transmitter — will be passed to the load in Port 3 and absorbed.

The load at Port 3 must match the impedance of the isolator exactly to prevent energy from being reflected from Port 3 to the input and output. In some instances, an isolator can produce second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

Please specify frequency or sub-band range, (see specifications). Order the product by model number that desired frequency falls within frequency range.

CAN BE SHIPPED UPS.

DB4641/5 SERIES OF DUAL STAGE FERRITE ISOLATORS, 806-960 MHz

DECIBEL

Decibel's dual ferrite isolator is a dual circulator with ports terminated in 30 and 60 watt loads.

A dual circulator is a 4-port nonreciprocal device that consists of ferrite material, magnets and six short lengths of transmission line terminated at a common junction.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 4.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 70-75 dB or more.

Sub-band optimized isolators provide the best possible balance of insertion loss vs. isolation because of a fine tuning feature.

Loads of 30 and 60 watts are used on the DB4600 series isolators to absorb the reflected transmitter power and dissipate the heat generated.

Applications

The ferrite isolator is the most effective solution to transmitter produced intermodulation — short of relocating transmitters — when the frequency separation between the desired and undesired signals is extremely close.

With its broad bandwidth, the isolator is equally suitable when frequency separation is 0 KHz to 6 MHz. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 70-75 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antennna by another transmitter — will be passed to the load in Port 3 and absorbed.

The load at Port 3 and 4 must match the impedance of the isolator exactly to prevent energy from being reflected from Port 3 and 4 to the input and output. In some instances, an isolator can produce second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

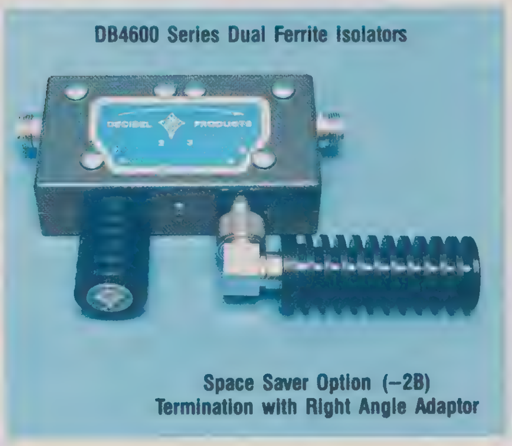
Please specify frequency or sub-band range, (see specifications). Order the product by DB number that the frequency falls within (tuning range). With other than 30 or 60 watt loads, consult DB4700 Intermodulation Panels, page 151 in this catalogue.

CAN BE SHIPPED UPS.

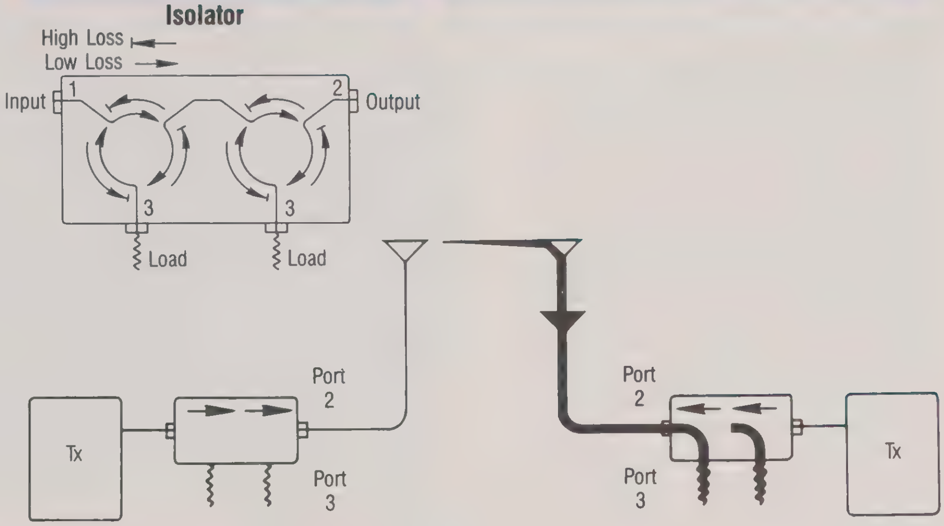
Dual Ferrite Isolator

DECIBEL
PRODUCTS
2
3

DB4600 Series Dual Ferrite Isolators



Space Saver Option (–2B) Termination with Right Angle Adaptor



Electrical Data	DB4641-2A	DB4642-2A	DB4643-2A	DB4644-2A	DB4645-2A
Frequency Range — MHz	806-850	850-870	869-895	895-928	928-960
Bandwidth — MHz	10	10	10	10	10
Isolation loss — dB					
Center frequency	75	75	75	75	75
Minimum	70	70	70	70	70
Insertion loss — dB					
Center frequency	.4	.4	.4	.4	.4
Maximum	.5	.5	.5	.5	.5
VSWR (maximum) (referenced to 50 ohms)	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1	1.22 to 1
Power handling — watts					
Maximum input	150	150	150	150	150
Maximum reflected	60	60	60	60	60

Mechanical Data	DB4641-2A	DB4642-2A	DB4643-2A	DB4644-2A	DB4645-2A
Dimensions* — in. (mm) Including connectors and load termination					
Height	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)	1.3125 (33.27)
Width	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)
Length	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)	5.625 (142.88)
Connectors	N-Female	N-Female	N-Female	N-Female	N-Female
Temperature range — C°	−30 to +60	−30 to +60	−30 to +60	−30 to +60	−30 to +60

*NOTE: (–2B) Space saver is 7.5" (177.8 mm) W, by 4.25" (107.95 mm) L, by 1.3125" (33.27 mm) H.

DB4345 HIGH POWER FERRITE CIRCULATOR, 928-940 MHz

Decibel's high power ferrite circulator is a 3-port nonreciprocal device that consists of ferrite material, magnets and three short lengths of transmission line terminated at a common junction. An internal heat sink with substantial surface area is provided for effective heat dissipation.

Power entering Port 1 emerges at Port 2. Power entering Port 2 emerges at Port 3. And power entering at Port 3 emerges at Port 1.

Insertion loss in the forward direction — Port 1 to 2, etc. — is approximately 0.5 dB, while the loss in the opposite direction — Port 2 to 1, etc. — is 25-30 dB or more.

DB4345 HS Isolator With Heat Sink

DB4345 HSL Isolator With Heat Sink and DB4303 100-Watt Load

Isolator Application

In 900-960 MHz applications the circulator is almost always used as an isolator, in which Port 3 is terminated with a 50 ohm load resistor.

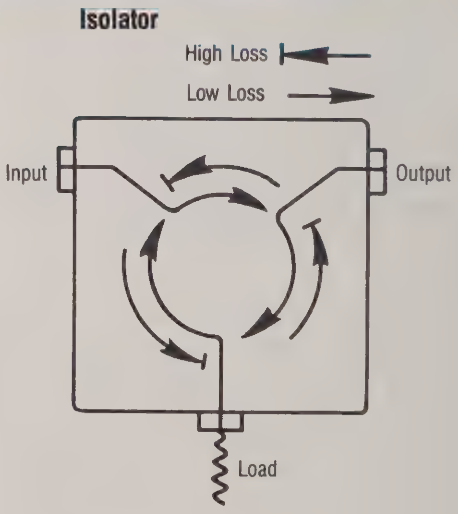
Unless the transmitter can be moved, the isolator is the best solution to transmitter produced intermodulation when the frequency separation is extremely close between the desired and undesired signals.

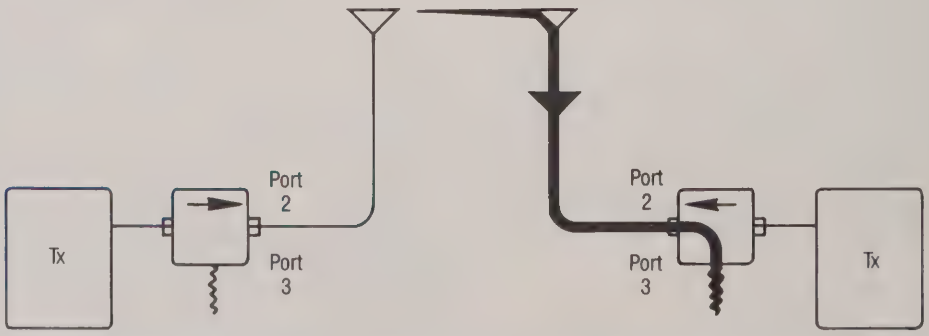
With its broad bandwidth, the isolator is equally suitable when frequency separation is 0 KHz to 20 MHz. Installed between the antenna and transmitter, the isolator acts like an RF diode. It passes the transmitter power from its input to output with little loss, but provides 25-30 dB signal attenuation in the opposite direction. Any energy entering Port 2 output — such as reflected transmitter power from the antenna or energy induced in the antennna by another transmitter — will be passed to the load in Port 3 and absorbed.

The load at Port 3 must match the impedance of the isolator exactly. In some instances, an isolator can produce second harmonic spurious energy. To protect against that, a low pass filter is often used between the isolator and the antenna.

Ordering Information

Please specify frequency or range. Consult Systems Engineering for special 870-890 MHz (rural cellular telephone). Order 928-932 MHz for paging and 935-940 MHz for trunked radio systems. For 60 to 300 watt loads, see Transmitter Combiner Accessories.





Specifications

	DB4345
Frequency Ranges — MHz	928-931, 935-940
Bandwidth — MHz	20
Isolation loss — dB	
Center frequency	30
Minimum	25
Insertion loss — dB	
Center frequency	.3
Maximum	.4
VSWR (maximum) (referenced to 50 ohms)	1.25 to 1
Power handling* — watts	
Maximum input	350
Maximum reflected	**
Temperature range — C°	−30 to +60
Connectors	N-Female
Dimensions (excluding connectors) — in. (mm)	
Width	2.5 (63.50)
Height	2.625 (66.7)
Depth	2.063 (52.39)

*To prevent damage to the circulator, select a 50 ohm load having a wattage rating that will absorb the maximum reflected power expected from the subsequent transmitter-antenna system.

DB4741/5 SERIES OF FERRITE I.M. PROTECTION PANELS, 806-960 MHz

DECIBEL

DB4700 I.M. Protection Panel

These low profile I.M. (intermodulation) protection panels consist of a single or dual sub-band optimized isolator in the 806-960 MHz bands, an optional DB4300 Series Harmonic Filter and 30, 60 or 100 watt terminations at output stages.

Design and Construction

Single isolators feature pass losses of 0.4 dB over their rated bandwidth and 30 dB minimum isolation on resonance.

Dual isolators feature pass losses of 0.5 dB over their rated bandwidth and 70 dB minimum isolation on resonance. When the harmonic filter is used, it adds 0.2 dB to the total pass loss. It has 55 dB minimum rejection at the second harmonic of the operating frequency.

The low profile panel uses one vertical rack space of 1.75″ (44.45 mm). It is 8″ (203.2 mm) deep with traversable mounting holes in 2″ (50.8 mm) increments from front to back, which allows alignment with other equipment in the rack.

DB4601 30-watt, DB4602 60-watt, and DB4303-F 100-watt loads are used in the panels to absorb the reflected transmitter power and dissipate the heat generated.

Ordering Information

Ordering or identifying a Decibel Products' intermodulation protection panel is straight forward with the 10 digit model nomenclature number. A digit or digits within the model nomenclature identifies the frequency range, number of isolators, with or without harmonic filter and load termination required for maximum power reflected.

Model Number Guide

DB47 ( )( )-( )( )( )

Frequency Band

Use 41 For 806-850 MHz
42 For 850-870 MHz
43 For 869-895 MHz
44 For 895-928 MHz
45 For 928-960 MHz

Total Number Of Isolators

Use 1 For Single Junction Isolator
2 For Dual Junction Isolator

(Reflected Power) Load Termination

Use 0 For (None Required)
1 For 30 Watt Load
2 For 60 Watt Load
3 For 100 Watt Load

Harmonic Filter

Use 0 = For (None Required)
1 = For (With Harmonic Filter)

Example: For ordering an I.M. Panel for 931.0 MHz with dual junction isolator, a harmonic filter and the final termination is to be for 100 watt load, then the product number to be ordered would be 1 each DB4745-213

Frequency Band
Dual Isolator
100 Watt Load
With Harmonic Filter

DB8500 MODULAR RECEIVER MULTICOUPLER 4 to 32 CHANNELS, 806-902 MHz

DECIBEL

POWER SUPPLY MODULE
AMPLIFIER MODULE
DECIBEL
DALLAS, TEXAS 75247 U.S.A.

Modular Receiver Multicoupler

From 4 to 32 receivers can be combined to a single antenna by this modular multicoupler, which features plug-in power supplies and bipolar, low noise RF amplifiers on low profile chasses.

The multicoupler can be ordered as an expandable unit only at 800/900 MHz. Channel capacity depends on the arrangement within the multicoupler of 4-way or 8-way power splitters, whose attenuation is offset by the RF amplifier.

The choice of an external preselector filter determines the bandpass response.

Configuration

Expandable 4-channel configurations can be expanded to 16 channels, four at a time. A 23 dB gain amplifier is connected to an internal 4-way power splitter, which is connected to from one to four 4-way power splitters mounted on the back panel.

Expandable 8-channel configurations combine up to 32 receivers, eight at a time. A 23 dB gain amplifier is connected to an internal 4-way power splitter, which connects to from one to four 8-way power splitters mounted on the back panel. This arrangement guarantees the same multicoupler performance to each receiver.

Ordering Information

See next page.

Electrical Data

Frequency Range — MHz	806-960
Noise figure (typical) — dB	
4 to 16 channel expandable	3.5
8 to 32 channel expandable	3.5
System gain (typical) — dB	
4 to 16 channel expandable	+6*
8 to 32 channel expandable	+3*
Rx/Rx isolation — dB	25
Receiver multicoupler absolute I.M. suppression with two −35 dBm input signals — dBm	−120**
Input/output VSWR (maximum)	1.5 to 1
1 dB compression point (minimum) — dBm	
4 to 16 channel expandable	+18*
8 to 32 channel expandable	+18*

*Models using 15 VDC amplifiers will have some degradation to specifications when operated with the 11-15 VDC input option.

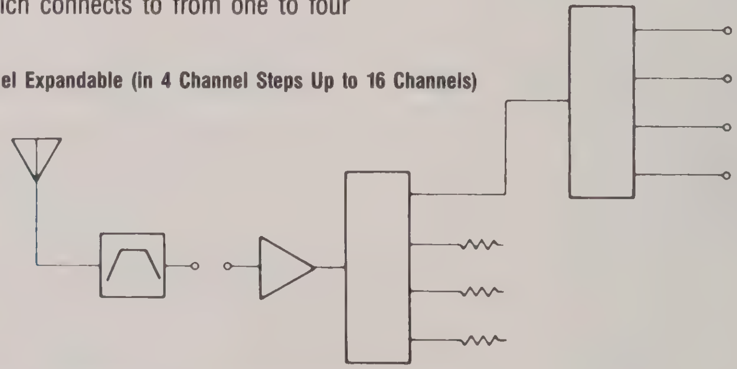
**Typical amplifier 3rd order intercept point is 34 dBm.

Mechanical Data

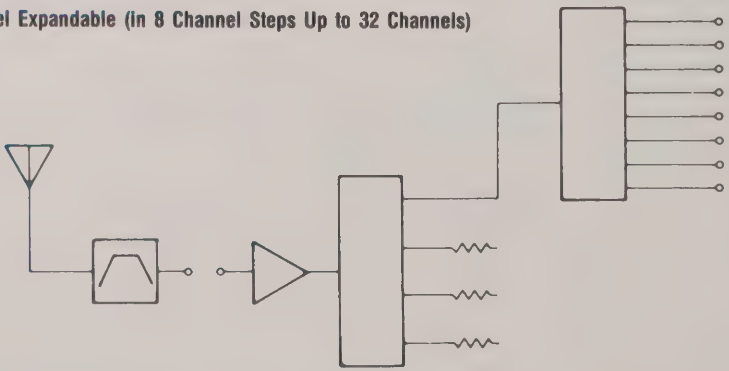
Dimensions — in. (mm)	
Height, excluding connectors	3.5 (88.9)
Width, excluding connectors	19 (482.6)
Depth, excluding connectors	12 (304.8)
Connector terminations (input, output)	N-Female, BNC-Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	10 (4.54)
Shipping weight — lbs. (kg)	12 (5.44)
Can be shipped UPS.	

Note: –W suffix indicates latest amplifier, enclosure and power divider designs used in product, also the latest design used in accessories.

4 Channel Expandable (in 4 Channel Steps Up to 16 Channels)



8 Channel Expandable (in 8 Channel Steps Up to 32 Channels)



DB8500 MODULAR RECEIVER MULTICOUPLER CONTINUED

DECIBEL

Ordering Information

Ordering or identifying a Decibel Products' receiver multicoupler is straight forward with the 7 digit model-nomenclature number. A digit or digits within the number identifies the frequency range, number of channels (receiver output ports), power input requirements (i.e. 115 VAC, 11-15 VDC, 220 VAC), helical preselector option, and receiver multicoupler configuration.

Example: DB8512-101. This model number would indicate a 12 channel, 806-821 MHz receiver multicoupler with 115 VAC power input requirement. Note: For external preselector order separately.

Note: –W suffix indicates latest amplifier, enclosure and power divider designs used in product, also the latest design used in accessories.

DB8 (5)( )( ) - ( )(0)( ) W

Latest Design

Frequency Range

806-902

Required Channels

04 - 4 Channels
08 - 8 Channels
12 - 12 Channels
16 - 16 Channels
24 - 24 Channels
32 - 32 Channels

Receiver Multicoupler Configuration

1 - 4 to 16 Channel expandable in 4 channel steps

2 - 8 to 32 Channels expandable in 8 channel steps

Internal Filter Option
0 - None

Order **
DB4192-WT 806-821 MHz
DB4193 825-835, 835-845 MHz
DB4196-WT 896-901 MHz

Power Supply
1 - 115 VAC Supply
2 - Delete 115 VAC Input Power Supply. Add 11-15 VDC Input Option
3 - 220 VAC Supply

**Order separately. Also need Note: To this parallel combinations requrements of filters available on request.

Preselector Filter Options

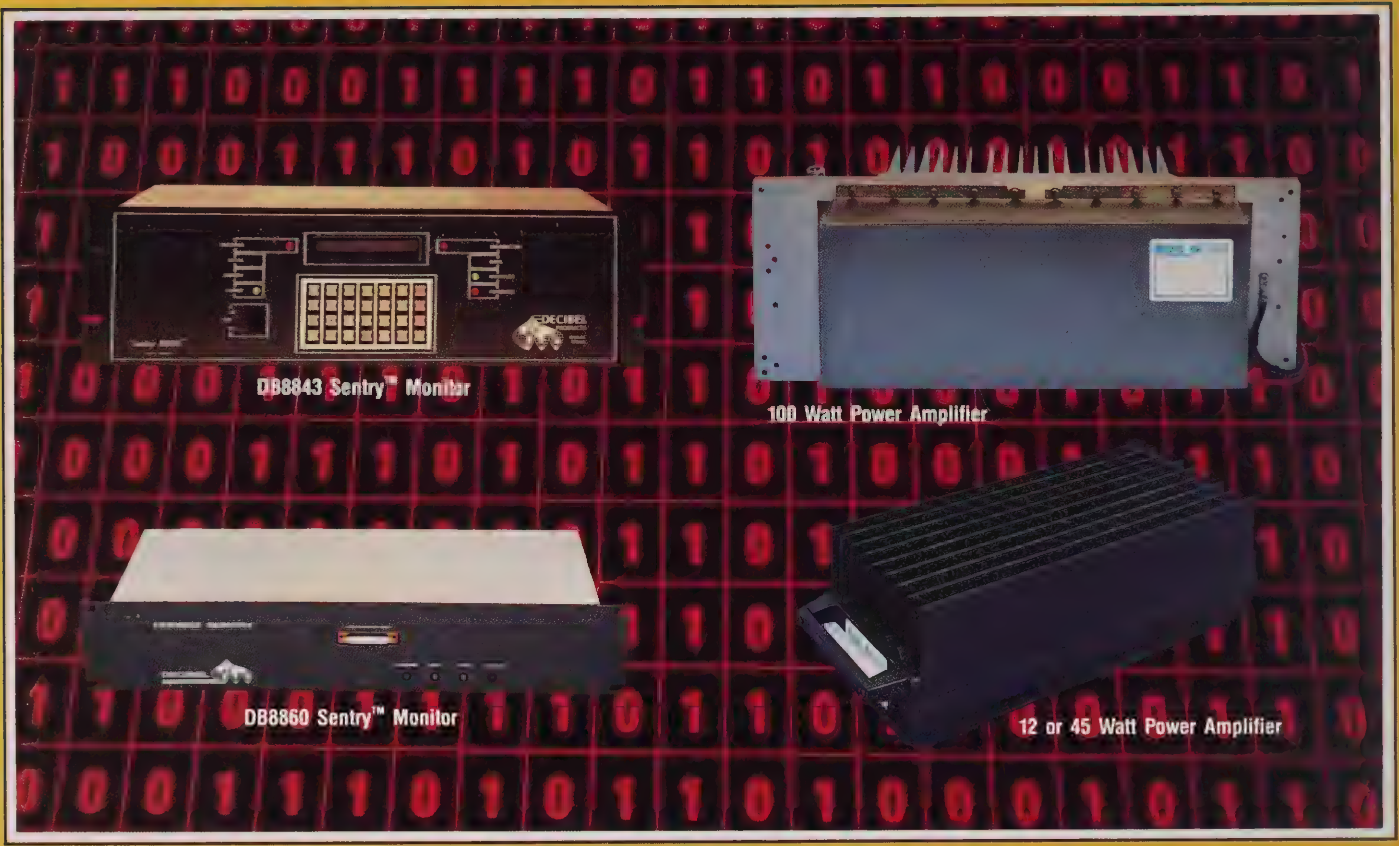
DB4193

DB4192WT

DB4196WT

Accessories

Model	Description	Model	Description
DB8900-A	Chassis only w/(115 VAC) Power Cord	DB8955	Power Supply (12-15 VDC) input polarity and high voltage protection
DB8920-A	4-way 800-960 MHz Power Splitter	DB8957	Power Supply Mod - 220 VAC/5 VDC
DB8921-A	8-way Power Splitter 806-845	DB8923-8	8 channel — 19″ (482.6 mm) Rack Mount BNC to N-Female connector kit w/panel
DB8922	BNC Dummy Load (50Ω)	DB8923-12	12 channel — 19″ (482.6 mm) Rack Mount BNC to N-Female connector cable kit w/panel
DB8945	30-915 MHz Amplifier (high gain) 23 dB	DB8923-16	16 channel — 19″ (482.6 mm) Rack Mount BNC to N-Female connector cable kit w/panel
DB8952	Power Supply (115 VAC to 15 VDC)	DB8923-24	24 channel — 19″ (482.6 mm) Rack Mount BNC to N-Female connector cable kit w/panel
DB8953	Power Supply (220 VAC to 15 VDC)		



Digital and Active RF Products— the Quest for Quality!

A major thrust of Decibel's quest for quality is in innovations through high technology.

800/900 MHz Power Amplifiers

Decibel's Chicago facility designs and manufactures amplifiers — Class A, AB and C — from small signal, low noise units to high power, high efficiency ones in the 1 MHz to 2 GHz frequency range.

These include base station 12 and 45 watt static and dynamic power amplifiers for cellular, SMR, conventional and paging systems in the 800-960 MHz range. Also, modifications are made to Harris, Avantek and Kokusai power amplifiers, changing them from static to dynamic operations.

See appropriate catalog pages for details.

Decibel is introducing 200 and 350 watt power amplifiers, high power, low-band, VHF and UHF power amplifiers; and too, we design and produce custom amplifiers to special needs.

Call us and let us know your requirements.

30-1000 MHz Sentry Remote Site Monitors

What if you could sit in your office or home and use a personal computer to call up any of your transmitter sites and bring in measurements just as though you were there with a watt meter and other instruments?

And what if your antenna sites would call you any time there's a problem?

And what if you could often correct the problems right there from the terminal?

You'd be doing in minutes and hours what once took days and weeks. And you'd be solving problems **before** the station went off the air. . .and customers became irritated.

Decibel has made it possible for you to do all these things with the Sentry 8000TM Series of Remote Site Monitors, which, in addition, let you keep electronic or hard-copy records.

The benefits of the Sentry monitors are obvious: more uptime, less routine maintenance, lower repair costs and many more.

If you want quality, you want Decibel power amplifiers and remote site monitors.

DB8860 SENTRY™ REMOTE SITE EQUIPMENT MONITOR, 30-1000 MHz

DECIBEL

DB8860 SENTRY
DECIBEL

DB8860 Sentry Monitor-Control System

The DB8860 Sentry is a modular, low-cost system designed to monitor and control site equipmennt of trunked, conventional, paging, cellular, IMTS, mobile radio dispatch and aviation systems from 30 to 1,000 MHz.

The Sentry can handle from one to eight transmitters/antennas and, with expansion slave units, expand to handle up to 64 transmitters/antennas. The basic system has four separate ports, each providing for four analog and two digital inputs that are user definable. Also included with each part are one Form C relay output, one relay driver and balanced audio pass-through. The basic system also provides for eight miscellanous digital inputs and four miscellaneous Form C relay outputs.

Analog or digital measurements can include environmental conditions such as fire, flood or intrusion, and system conditions such as transmitter and antenna forward and reflected power, FSK, analog modulation event time, key event time, VSWR and combiner and filter losses. Unique functions are useful for simulcast system monitoring.

The DB8860 is expandable to 128 analog signals, 96 digital signals and 80 control relay points.

User benefits include more up-time, less routine maintenance and faster response to repair needs — which results in greater customer satisfaction and fewer complaints.

Design and Operation

The Sentry is microprocessor controlled, with CMOS circuitry. It receives information from accurate, low-impedance in-line sensors and processes and reports the measurement information or takes predetermined action such as contact closures or openings.

A portable, detachable keypad/display unit is offered as an option. Data can be ouput locally or it can be communicated to a terminal, printer or computer via an RS-232 interface and a built-in modem with 300 or 1200 baud rate. Also, limit data can be input or changed remotely.

Other Options

In addition to the portable keypad and display, other options include battery back-up, voice synthesized reporting, radio link communications, computer-to-computer communications, DTMF control, channel-selectable audio pass-through, and expansion to 32 ports.

Ordering Information

Call the factory for a DB8860 Sentry suited to your requirements.

Sentry Configuration Chart For Number Required Expansion

Sentry/Slave Units	1	1	1	2	2	3	3	4	4
Four Port A/D Cards	0	1	2	3	4	5	6	7	8
Ports Required	0	4	8	12	16	20	24	28	32
Analog Inputs	0	16	32	48	64	80	96	112	128
Digital Inputs	8	16	24	40	48	64	72	88	96
Relay Outputs	4	8	12	20	24	32	36	44	48
Relay Drivers	0	4	8	12	16	20	24	28	32
Audio Pass Inputs	0	4	8	12	16	20	24	28	32

Note 1: A maximum of two Four Port A/D cards per Sentry or Slave Unit.
Note 2: Up to three Slave Units can be connected to an 8 port Sentry to total 32 ports.
Note 3: A Packet, RS232 or Modem card is required to program the Basic Sentry Monitor.
Note 4: A Four port A/D Card is required to monitor transmitter/antenna power levels.

Specifications

Dimensions — in. (mm)	
Width	19 (482.6)
Height	3.5 (88.9)
Depth	6 (152.4)
Power input — watts	5
Battery RAM retention	3 years
Temperature range — C°	0 to +60
Humidity range (maximum)	0 to 95%
Communication	RS-232, 300, 1200 Baud, Auto Baud, Auto Answer, Auto Dial, Remote Access, Voice, DTMF
Relay driver output	100 mA
Control relay output	2 amp
Net weight — lbs. (kg)	<5 (2.27)

DB8843 SENTRY™ REMOTE SITE EQUIPMENT MONITOR, 30-1000 MHz

Decibel offers several models of the Sentry to monitor and control site equipment of trunked, conventional, paging, cellular, IMTS, mobile radio dispatch and aviation systems from 30 to 1,000 MHz.

The DB8843 Sentry reports the condition of transmitters, combiners, antennas, transmission lines auxilliary equipment and selected environmental parameters. Transmitter and antenna measurements include forward power, reflected power, VSWR and other transmitter parameters. Combiner measurements include insertion loss per channel.

The DB8843 can monitor from one to four antenna systems with up to 18 transmitters or two antenna systems with up to 20 transmitters.

Benefits to the user include more uptime, more intelligent maintenance dispatch and faster repair — which result in greater customer satisfaction and fewer complaints.

Design and Construction

The DB8843 Sentry is microprocessor controlled with CMOS circuitry. It receives information from accurate low impedance in-line sensors and processes and reports the measurement information.

Green LEDs signify that the equipment is operating within preset limits. Red LEDs indicate problems and alarms can be sounded. The monitor has six local alarm inputs and four dry contact alarm outputs.

DECIBEL
Sentry 8000

DB8843 Sentry Monitor-Control System

A 16-character alpha-numeric LCD display presents answers from inquiries entered via the 28-button keyboard. Data can be output locally or it can be communicated to a terminal, printer or computer via an RS-232 interface and a built-in modem with 300 or 1200 baud rate. Relays can be controlled and parameters entered or changed remotely.

The DB8843 Sentry can display two variables at one time, which is invaluable in tuning and retuning combiners, etc. Forward and reflected powers on any channel can be shown simultaneously.

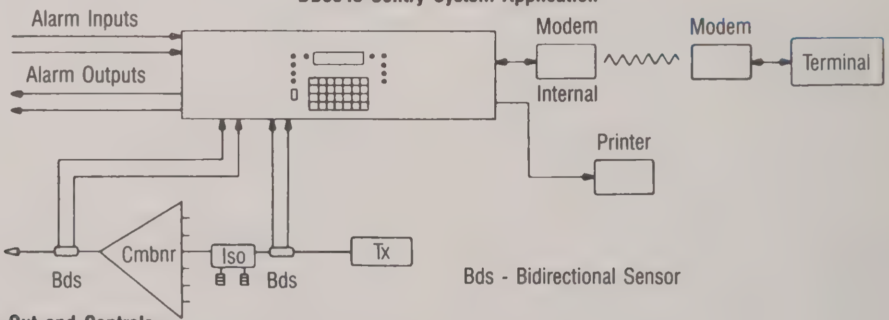
Ordering Information

Call the factory for a DB8843 Sentry suited to your requirements.

Specifications	
Dimensions — in. (mm)	
Width	19 (482.6)
Height	5.25 (133.35)
Depth	6 (152.4)
Power input — watts	8
Battery RAM Retention	3 years
Accuracy	±5% 5 watts to 100 watts
Communication*	300, 1200 Baud, Hayes Compatible, Internal Modem, Auto Answer, Auto Dial, Remote Access
Alarms*	
Output	2 amp dry contact
Input	dry contact
Temperature range — C°	0 to +60
Humidity range (maximum)	0 to 85%
Net weight — lbs. (kg)	<6 (2.72)

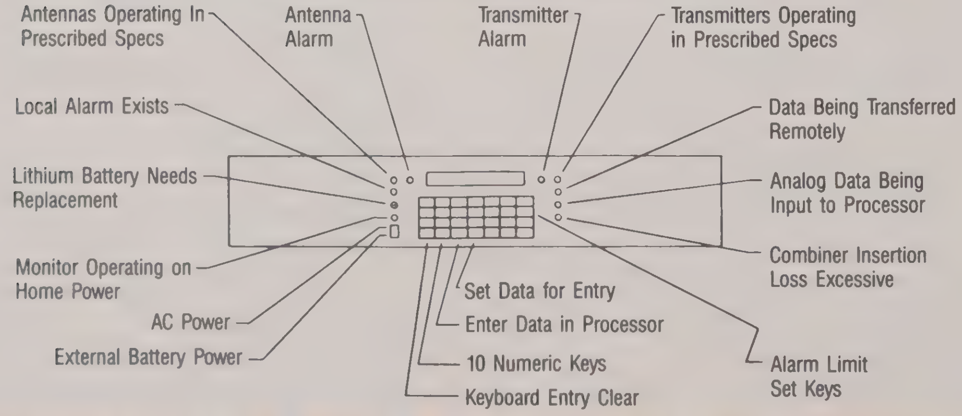
*Available options.

DB8843 Sentry System Application


Alarm Inputs
Alarm Outputs
Modem
Internal
Modem
Terminal
Printer
Bds
Cmbnr
Iso
Bds
Tx

Bds - Bidirectional Sensor

DB8843 Sentry Panel Read Out and Controls


Antennas Operating In Prescribed Specs
Antenna Alarm
Transmitter Alarm
Transmitters Operating in Prescribed Specs
Local Alarm Exists
Data Being Transferred Remotely
Lithium Battery Needs Replacement
Analog Data Being Input to Processor
Monitor Operating on Home Power
Combiner Insertion Loss Excessive
AC Power
Set Data for Entry
Enter Data in Processor
External Battery Power
10 Numeric Keys
Alarm Limit Set Keys
Keyboard Entry Clear

DB8120 DPM

DIGITAL POWER METER
30-1000 MHz

DECIBEL

A portable digital power meter, the DB8120 DPM plugs into Decibel DB8881/9 Sensors and gives a digital readout within a range of 0 to 1000 watts.

Measurements include transmitter and antenna forward and reflected power or input and output power to indicate system performance. Any combination of the two can be displayed simultaneously, which is beneficial when tuning or retuning cavities, combiners, etc.

Convenience

The DB8120 DPM is more convenient to use than an inline watt meter. It is hand-held and its brilliant LED display is easy to read and highly accurate.

The meter is powered by a 9-volt battery, and an AC power converter is optional. A low battery indicator is incorporated.

It has a belt clip for portable use, but can also be permanently or magnetically mounted.

Ordering Information

Order DB8120 DPM digital power meter. Battery is included. AC power convertor is optional.

Sensor Ordering Information

For Decibel's accurate low impedance, in-line bidirectional and directional sensors, see chart.

DB8120 DPM Digital Power Meter

Specifications	
Dimensions — in. (mm)	
Height	5 (12.7)
Width	3 (7.62)
Depth	1 (25.4)
Power source (AC power convertor optional)	9 volt battery
Temperature range — C°	0 to +60
Humidity range (maximum)	0 to 95%
Net weight — lbs. (kg)	1 (.45)
Shipping weight — lbs. (kg)	1.5 (.68)

DB8882A-1000 Sensor

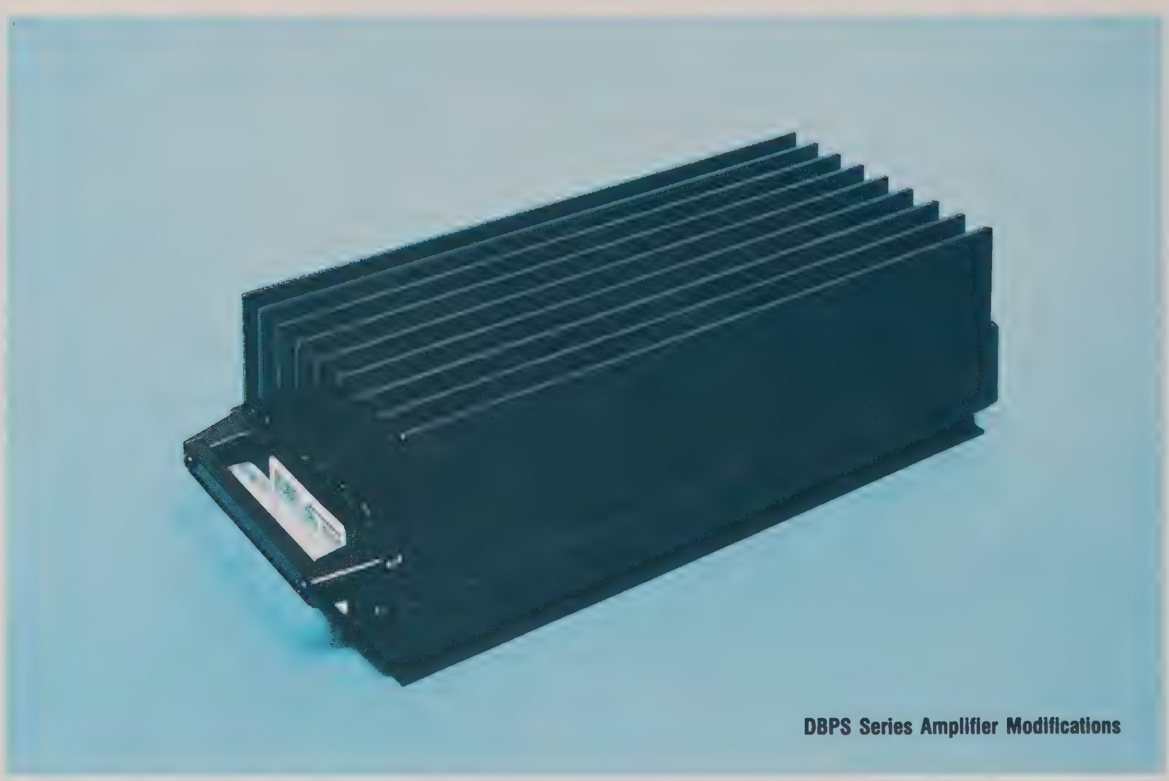
DB8881A-1000 Sensor

Sentry^{TM} RF Power Sensors

Model Number	Description	Frequency-MHz
	(Rated to 1000 watts)	
DB8881A1000	Unidirectional Sensor, N-Female	450-1000
DB8883A1000	Unidirectional Sensor, N-Male	450-1000
DB8884A1000	Unidirectional Sensor, N-Female	66-325
DB8886A1000	Unidirectional Sensor, N-Male	66-325
DB8887A1000	Unidirectional Sensor, N-Female	30-50
DB8889A1000	Unidirectional Sensor, N-Female	30-50
DB8882A1000	Bidirectional Sensor	450-1000
DB8885A1000	Bidirectional Sensor	66-325
DB8888A1000	Bidirectional Sensor	30-50
	(Rated to 350 watts)	
DB8881A350	Unidirectional Sensor, N-Female	450-1000
DB8883A350	Unidirectional Sensor, N-Male	450-1000
DB8884A350	Unidirectional Sensor, N-Female	66-325
DB8886A350	Unidirectional Sensor, N-Male	66-325
DB8887A350	Unidirectional Sensor, N-Female	30-50
DB8889A350	Unidirectional Sensor, N-Male	30-50
DB8882A350	Bidirectional Sensor	450-1000
DB8885A350	Bidirectional Sensor	66-325
DB8888A350	Bidirectional Sensor	30-50
	(Rated to 100 watts)	
DB8881A100	Unidirectional Sensor, N-Female	450-1000
DB8883A100	Unidirectional Sensor, N-Male	450-1000
DB8884A100	Unidirectional Sensor, N-Female	66-325
DB8886A100	Unidirectional Sensor, N-Male	66-325
DB8887A100	Unidirectional Sensor, N-Female	30-50
DB8889A100	Unidirectional Sensor, N-Male	30-50
DB8882A100	Bidirectional Sensor	450-1000
DB8885A100	Bidirectional Sensor	66-325
DB8888A100	Bidirectional Sensor	30-50

DBPSAU-G, DBPSPHA-G DBPSPKO-G POWER AMP MODIFICATION STATIC TO DYNAMIC

DECIBEL



DBPS Series Amplifier Modifications

Decibel modifies Avantek, Harris and Kokusai power amplifiers at its factory locations, converting them from static to dynamic operation.

Features

1. 860-900 MHz operation.
2. 45 watts output power ±1 dB.
3. Power can be adjusted manually 1 dB.
4. Input power range is .75 to 1.6 watts.
5. Internal ferrite isolator protects RF output.
6. +26 V nominal, 5.3 amps typical.
7. TTL compatible on/off control.
8. 3-bit binary control pattern.
9. Dynamic power steps in 4 dB increments.

Warranty

Decibel provides a 1-year limited warranty on the modification and an optional 1-year service contract on the power amplifier, order number DBPMODS-G.

Ordering Information

Order DBPSPAU-G for Avantek amplifiers, DBPSPHA-G for Harris amplifiers and DBPSPKO-G for Kokusai.

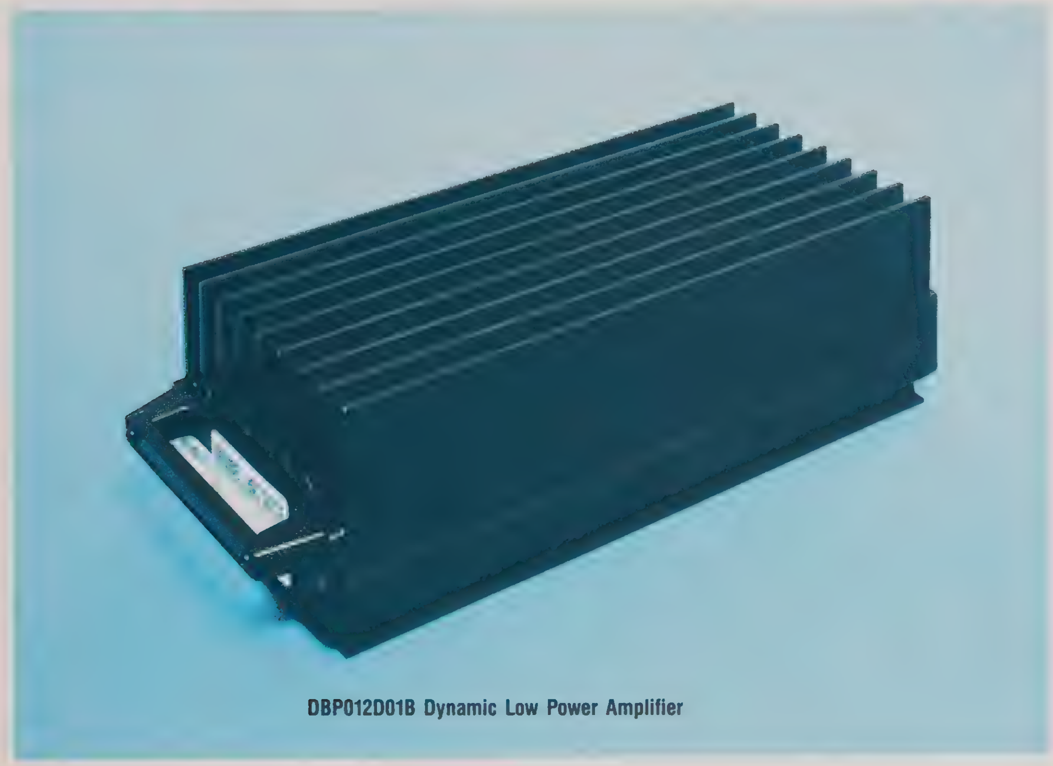
CAN BE SHIPPED UPS.

Specifications

RF output protection	Internal ferrite isolator provides open and short circuit protection
Intermodulation products	>40 dB below injected signal of +20 dBm, 500 kHz away from CXR
DC current	6 amps maximum at +26 VDC
DC voltage range	+19 to +30 VDC with over voltage protection to +50 VDC
Temperature range — C°	0 to +50 (fan cooling with 150 cfm minimum)
Operating humidity range	0 to 95% non-condensing
Storage temperature — C°	−40 to +60
Dimensions (less handle) — in. (mm)	
Height	3.9 (99.06)
Width	5.4 (137.16)
Length	12.4 (314.96)
Weight — lbs. (kg)	7.7 (3.5)
Step range — dB	4±.5 from 45 watts
Power range	28 dB in seven 4 dB steps
Access time (maximum)	15 Msec

DBP012D01B DYNAMIC LOW POWER AMP 12 WATTS, 860-960 MHz

DECIBEL



DBP012D01B Dynamic Low Power Amplifier

The DBP012D01B Dynamic Power Amplifier is a 12-watt plug-in unit, compatible with cellular operations using Bell System plug-in amplifiers.

It has a special power control circuit that maintains output power within ±1 dB of the preset level, across full specifications. A 3-bit binary pattern allows seven step reductions in power in 4 dB increments, when used with appropriate software.

Features

1. 860-900 or 915-960 MHz operation.
2. 12 watts output power.
3. Power can be reduced to 6 watts by manual adjustment.
4. Input power range is .75 to 1.6 watts.
5. Internal ferrite isolator protects RF output.
6. +26 V nominal, 5.3 amps typical.
7. TTL compatible on/off control.
8. Dynamic power control.
9. Power stable to ±1 dB.
10. 3-bit binary pattern.

Applications

This power amplifier can be used, without modification, in a static power cell site, and it will operate at full rated power.

It can also be used to reduce reuse cell interference by maintaining minimum power output, while preserving an adequate path to the mobile telephone (OEM software required).

The amplifier permits cells to be reduced and enlarged remotely, by software commands, to increase and decrease the channels available as loading requirements change.

Ordering Information

Order DBP012D01B-G for 860-900 MHz and DBP012D01B-H for 915-960 MHz.

New 2-Year Limited Warranty!

CAN BE SHIPPED UPS.

Specifications

RF output protection	Internal ferrite isolator provides open and short circuit protection
Intermodulation products	>40 dB below injected signal of +20 dBm, 500 kHz away from CXR
DC current	6 amps maximum at +26 VDC
DC voltage range	+19 to +30 VDC with over voltage protection to +50 VDC
Temperature range — C°	−30 to +60 (fan cooling with 150 cfm minimum)
Operating humidity range	0 to 95% non-condensing
Storage temperature — C°	−40 to +60
Dimensions (less handle) — in. (mm)	
Height	3.9 (99.06)
Width	5.4 (137.16)
Length	12.4 (314.96)
Weight — lbs. (kg)	7.7 (3.5)
Step range — dB	4±.5 from 6 to 12 watts
Power range	28 dB in seven 4 dB steps with 3 dB manual adjustment with 31 dB total dynamic range

DBP012C01B LOW POWER AMPLIFIER 12 WATTS, 860-960 MHz

DECIBEL

DBP012C01B Low Power Amplifier

The DBP012C01B Power Amplifier is a 12-watt plug-in unit, compatible with cellular operations using Bell System plug-in amplifiers.

It has a special power control circuit that maintains output power within ±1 dB of the preset level, across full specifications.

Features

1. 860-900 or 915-960 MHz operation.
2. 12 watts output power.
3. Power can be reduced to 1 watt by manual adjustment.
4. Input power range is .75 to 1.6 watts.
5. Internal ferrite isolator protects RF output.
6. +26 V nominal, 5.3 amps typical.
7. TTL compatible on/off control.
8. Power stable to ±1 dB.
9. Dynamic power control, 3-bit binary control pattern plug-in, optional.

Applications

This low cost power amplifier can be used in cellular applications where high power or dynamic power adjustments are not required.

Options

1. Field installable option DBPOPLD-G to convert to dynamic cellular base station amplifier. (See DBP012D01B-G or H for specifications.)
2. Automatic 3 dB thermal power cutback to prevent damage from overheating, order number DBPOPT-G.

Ordering Information

Order DBP012C01B-G for 860-900 MHz and DBP012C01B-H for 915-960 MHz.

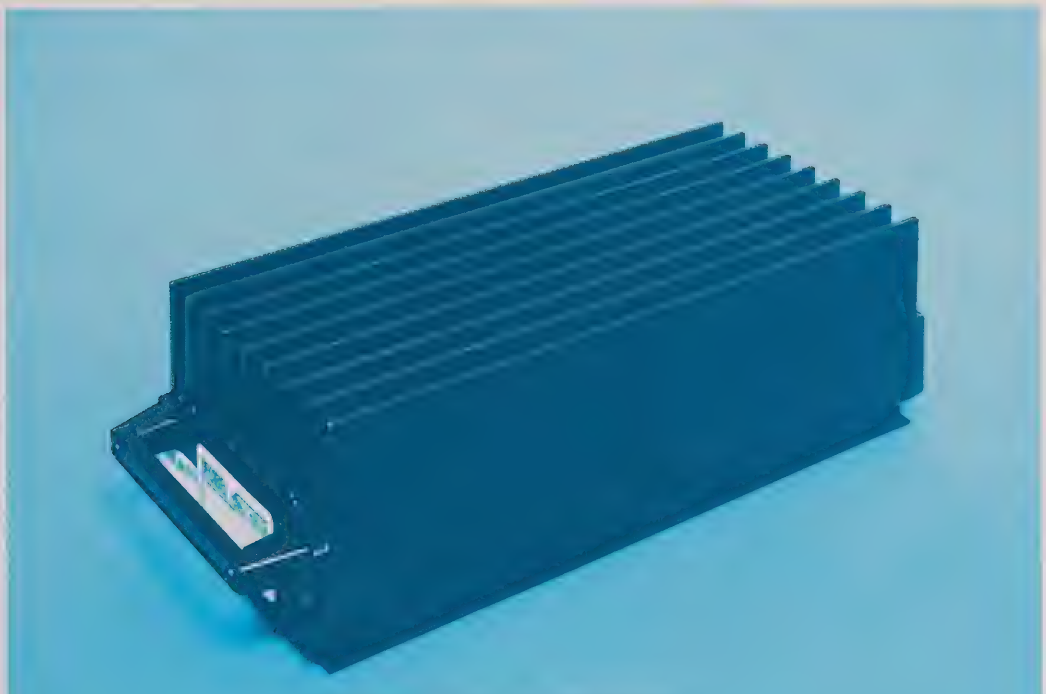
New 2-Year Limited Warranty!

CAN BE SHIPPED UPS.

Specifications	
RF output protection	Internal ferrite isolator provides open and short circuit protection
Intermodulation products	>40 dB below injected signal of +20 dBm, 500 kHz away from CXR
DC current	6 amps maximum at +26 VDC
DC voltage range	+19 to +30 VDC with over voltage protection to +50 VDC
Temperature range — C°	−30 to +60 (fan cooling with 150 cfm minimum)
Operating humidity range	0 to 95% non-condensing
Storage temperature — C°	−40 to +60
Dimensions (less handle) — in. (mm)	
Height	3.9 (99.06)
Width	5.4 (137.16)
Length	12.4 (314.96)
Weight — lbs. (kg)	7.7 (3.5)

DBP045D01B

DYNAMIC HIGH POWER AMP
45 WATTS, 860-960 MHz



DBP045D01B Dynamic High Power Amplifier

The DBP045D01B Dynamic Power Amplifier is a 45-watt plug-in unit, compatible with cellular operations using Bell System plug-in amplifiers.

It has a special power control circuit that maintains output power within ±1 dB of the preset level, across full specifications. A 3-bit binary pattern allows seven step reductions in power in 4 dB increments, when used with appropriate software.

Features

1. 860-900 or 915-960 MHz operation.
2. 45 watts output power.
3. Power can be reduced to 12 watts by manual adjustment.
4. Input power range is .75 to 1.6 watts.
5. Internal ferrite isolator protects RF output.
6. +26 V nominal, 5.3 amps typical.
7. TTL compatible on/off control.
8. Dynamic power control.
9. Power stable to ±1 dB.
10. 3-bit binary control pattern.

Applications

This power amplifier can be used, without modification, in a static power cell site, and it will operate at full rated power.

It can also be used to reduce reuse cell interference by maintaining minimum power output, while preserving an adequate path to the mobile telephone (OEM software required).

The amplifier permits cells to be reduced and enlarged remotely, by software commands, to increase and decrease the channels available as loading requirements change.

Ordering Information

Order DBP045D01B-G for 860-900 MHz and DBP045D01B-H for 915-960 MHz.

New 2-Year Limited Warranty!

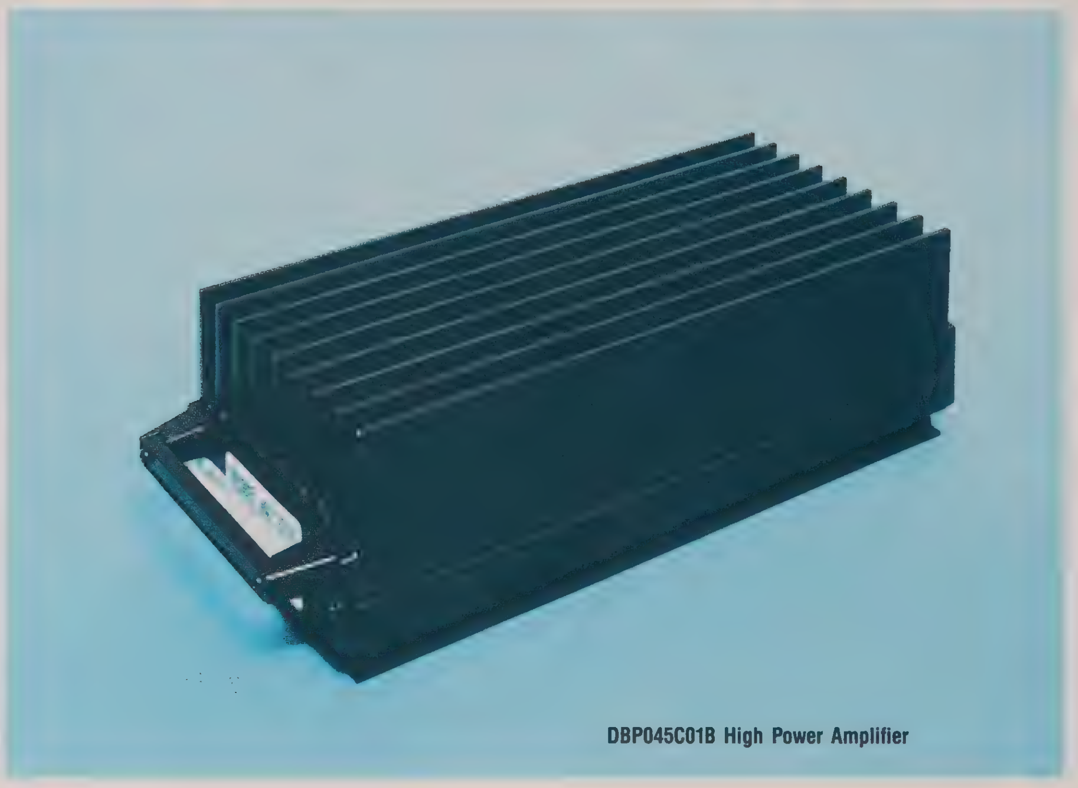
CAN BE SHIPPED UPS.

Specifications

RF output protection	Internal ferrite isolator provides open and short circuit protection
Intermodulation products	>40 dB below injected signal of +20 dBm, 500 kHz away from CXR
DC current	6 amps maximum at +26 VDC
DC voltage range	+19 to +30 VDC with over voltage protection to +50 VDC
Temperature range — C°	−30 to +60 (fan cooling with 150 cfm minimum)
Operating humidity range	0 to 95% non-condensing
Storage temperature — C°	−40 to +60
Dimensions (less handle) — in. (mm)	
Height	3.9 (99.06)
Width	5.4 (137.16)
Length	12.4 (314.96)
Weight — lbs. (kg)	7.7 (3.5)
Step range — dB	4±.5 from 45 watts
Power range	28 dB in seven 4 dB steps 6 dB manual adjustment with 34 dB total dynamic range

DBP045C01B HIGH POWER AMPLIFIER 45 WATTS, 860-960 MHz

DECIBEL


DBP045C01B High Power Amplifier

The DBP045C01B Power Amplifier is a 45-watt plug-in unit, compatible with cellular operations using Bell System plug-in amplifiers.

It has a special power control circuit that maintains output power within ±1 dB of the preset level, across full specifications.

Features

1. 860-900 or 915-960 MHz operation.
2. 45 watts output power.
3. Power can be reduced to 7 watts by manual adjustment.
4. Input power range is .75 to 1.6 watts.
5. Internal ferrite isolator protects RF output.
6. +26 V nominal, 5.3 amps typical.
7. TTL compatible on/off control.
8. Power stable to ±1 dB.
9. Dynamic power control, 3-bit binary control pattern plug-in, optional.

Applications

This low cost power amplifier can be used in cellular applications where a dynamic power amplifier is not required.

Options

1. Field installable option DBP0PHD-G to convert to dynamic cellular base station amplifier. (See DBP045D01B-G or H for specifications.)
2. Automatic 3 dB thermal power cutback to prevent damage from overheating, order number DBP0PT-G.

Ordering Information

Order DBP45C01B-G for 860-900 MHz and DBP045C01B-H for 915-960 MHz.

New 2-Year Limited Warranty!

CAN BE SHIPPED UPS.

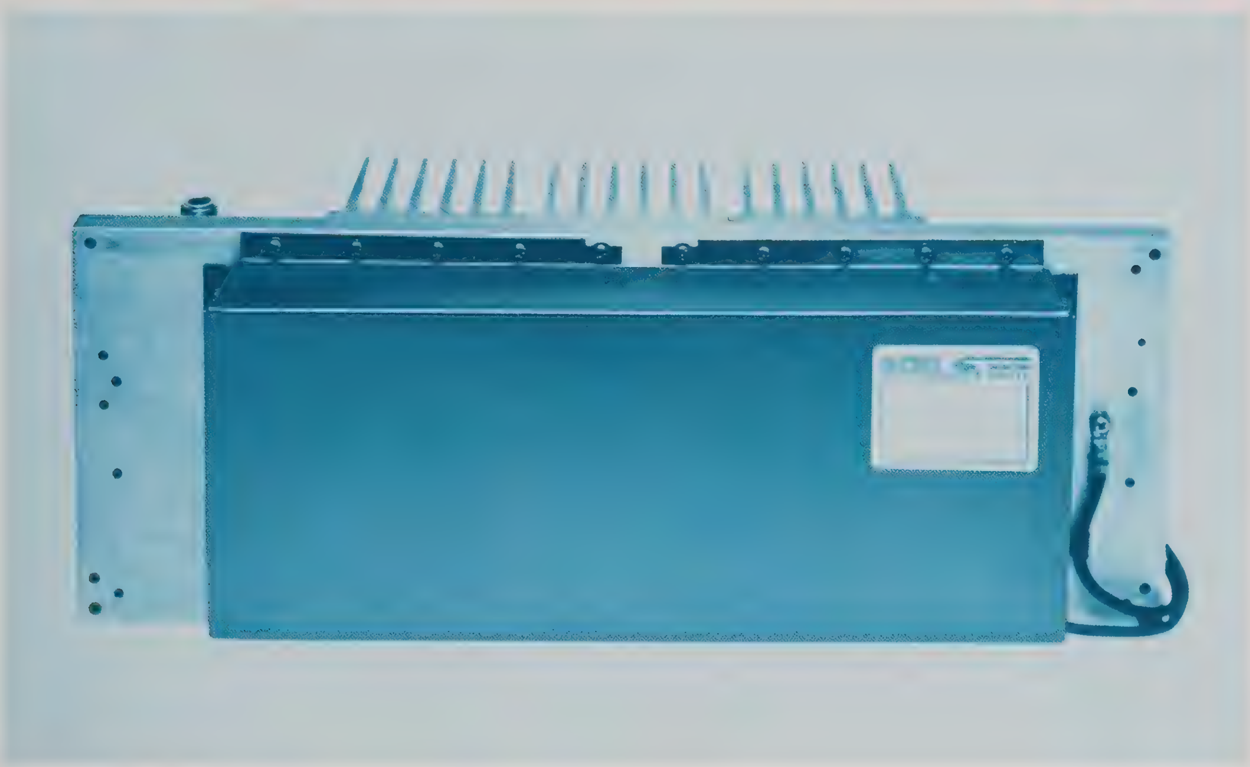
Specifications

RF output protection	Internal ferrite isolator provides open and short circuit protection
Intermodulation products	>40 dB below injected signal of +20 dBm, 500 kHz away from CXR
DC current	6 amps maximum at +26 VDC
DC voltage range	+19 to +30 VDC with over voltage protection to +50 VDC
Temperature range — C°	−30 to +60 (fan cooling with 150 cfm minimum)
Operating humidity range	0 to 95% non-condensing
Storage temperature — C°	−40 to +60
Dimensions (less handle) — in. (mm)	
Height	3.9 (99.06)
Width	5.4 (137.16)
Length	12.4 (314.96)
Weight — lbs. (kg)	7.7 (3.5)

DBP100CA1B

HIGH POWER AMPLIFIER
100 WATTS, 850-960 MHz

DECIBEL



The DBP100CA1B is a 100-watt continuous duty amplifier with an internal unidirectional sensor that monitors output power. It is suitable for cellular, trunking, paging and conventional systems.

A special thermal alarm indicates an excessive temperature rise at the amplifier heat sink. The unit can be set up to automatically reduce power by 3 dB in alarm conditions.

New 2-year limited warranty.

Features

1. 850-900 or 915-960 MHz operation.
2. 100 watts output power.
3. Power can be reduced to 10 watts by manual adjustment.
4. Input power range is 75 to 150 milliwatts.
5. Internal ferrite isolators give RF output open and short protection.
6. Duty cycle is 100% continuous.

Option

This amplifier can be used with the Decibel Sentry 8000™ Remote Antenna Site Monitor — an alarm for a 3 dB power reduction is optional.

Other Models

The amplifier is available in 13.6 VDC models: DBP100CA1A-G for 850-900 MHz and DBP100CA1A-H for 915-960 MHz.

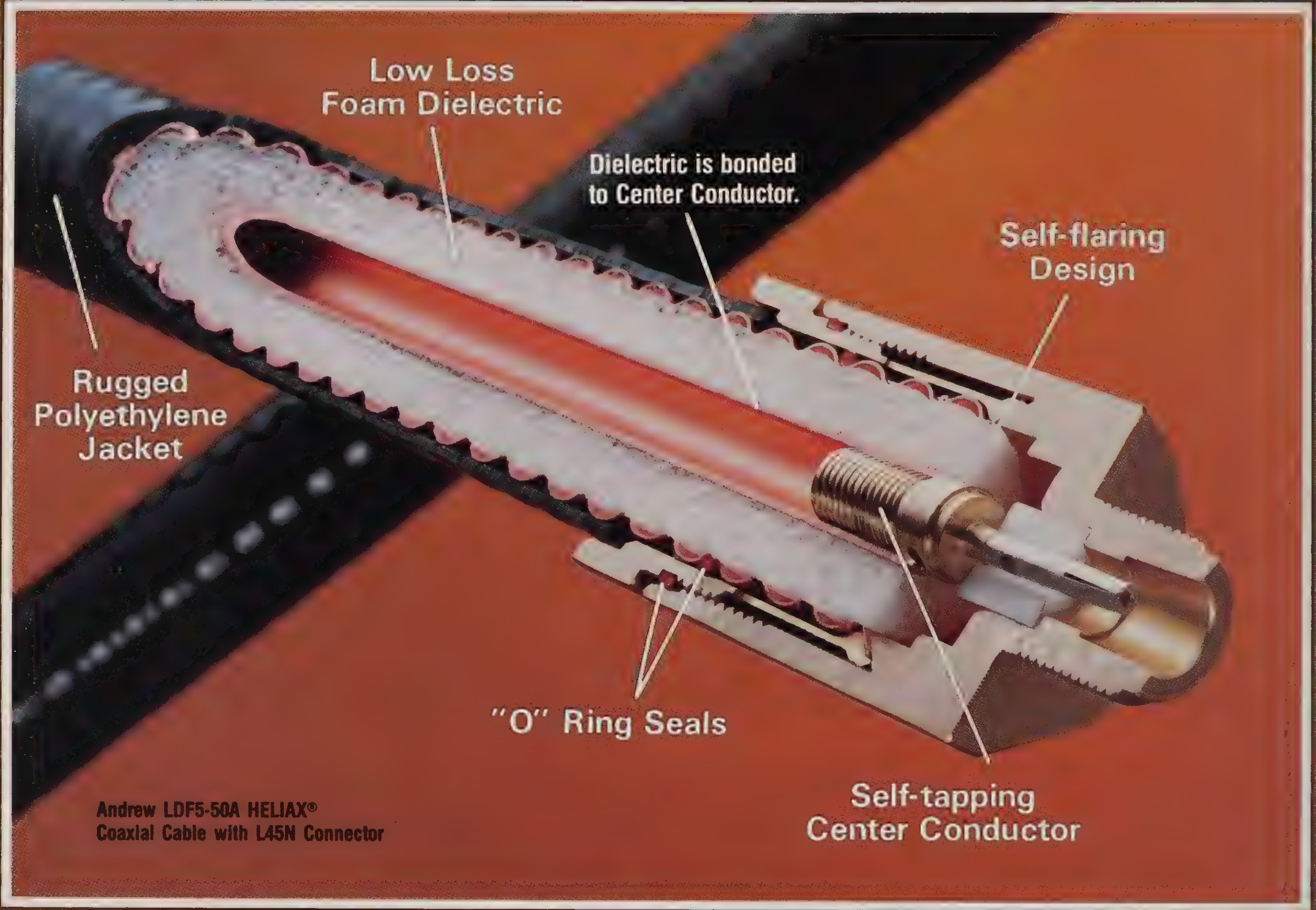
Ordering Information

Order DB100CA1B-G for 850-900 MHz and DB100CA1B-H for 915-960 MHz. For 13.6 VDC models, order DBP100CA1A-G for 850-900 MHz and DBP100CA1A-H for 915-960 MHz.

CAN BE SHIPPED UPS.

Specifications

RF output protection	Internal ferrite isolator provides open and short circuit protection
DC current	12 amps maximum at +26 VDC
DC voltage range	19 to 28 VDC
Temperature range — C°	−30 to +60
Power control circuit	Maintains a stability of ±1 dB
Input SWR	2:1 at rated output power
Dimensions — in. (mm)	
Height	7 (177.8)
Width	19 (482.6)
Depth	7 (177.8)
Mounting — in. (mm)	19 (482.6) wide rack mounting, 7 (177.8) standard EIA rack height



Andrew LDF5-50A HELIAX®
Coaxial Cable with L45N Connector

Cables—the Quest for Quality!

An antenna can be only as good as the system that supports it. As you know, a single drop of water inside a connection can short out the best of antennas.

That's why Decibel is so quality conscious — from the antenna to the cable to the wrap on the smallest connection.

HELIAX® Coaxial Cables

Decibel offers LDF® foam, air dielectric and superflexible HELIAX coaxial cable, with or without the connectors installed. Air-dielectric cable is ideal for systems that require a pressure path to the antenna, Foam-Dielectric cable for others.

We offer HELIAX because it eliminates moisture and RF leakage. Its superior flexibility and consistent quality have been proven in installations that have given outstanding performance for decades in severe and hostile environment, above ground and below!

We're convinced that connectors by other manufacturers should not be used on HELIAX cables.

VAPOR-BLOC® RG Cable

To protect against moisture, sunlight and corrosion, VAPOR-BLOC cables have a "triple defense".

First, the outer jacket is built to be especially resistant.

Second, an inert semi-liquid compound fills all space between the polyethylene dielectric and the outer jacket, flooding the copper braid. The compound can actually "heal" small cuts that might lead to eventual failures.

Third, VAPOR-BLOC has a solid center conductor — instead of a "twisted wire" — which blocks moisture that could travel along the conductor.

VAPOR-WRAP®

Along with a complete line of connectors and accessories — Decibel offers the 11317 VAPOR-WRAP Connector Sealing Kit. We recommend this pliable plastic compound instead of tape for weatherproofing connectors after installation in the field. It's the final step in the quest for quality.

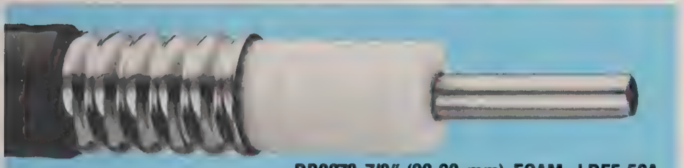
If you want quality, you want Decibel cables, connectors and accessories.

HELIAX and LDF are registered trademarks of Andrews Corp.
VAPOR-BLOC and VAPOR-WRAP are registered trademarks of Decibel Products, Inc.

CABLES HELIAX® COAXIAL CABLE AND ACCESSORIES

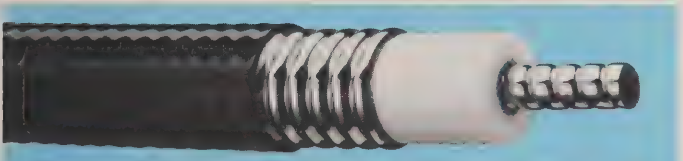
DECIBEL

DB2068 ½″ (12.7 mm) FOAM, LDF4-50A

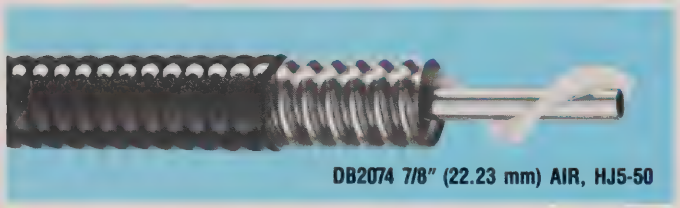


DB2078 7/8″ (22.23 mm) FOAM, LDF5-50A

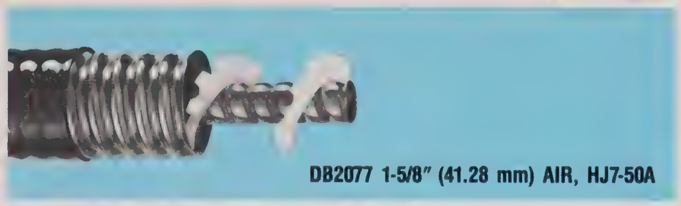
DB2088 1¼″ (31.75 mm) FOAM, LDF6-50A



DB2086 1-5/8″ (41.28 mm) FOAM, LDF7-50A

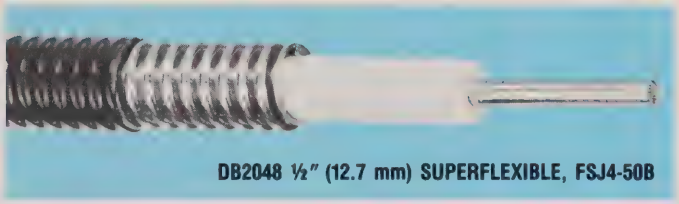


DB2074 7/8″ (22.23 mm) AIR, HJ5-50



DB2077 1-5/8″ (41.28 mm) AIR, HJ7-50A

DB2047 ¼″ (6.35 mm) SUPERFLEXIBLE, FSJ1-50



DB2048 ½″ (12.7 mm) SUPERFLEXIBLE, FSJ4-50B

HELIAX coaxial cable and accessories are generally available from stock at Decibel's Dallas Distribution Center or our associated North American Factory Authorized Warehouses. Interconnect and jumper assemblies are available, in addition to cut-to-length transmission lines, with Andrew connectors affixed.

HELIAX coaxial cables and connectors are ideally suited for any coaxial transmission line application. Many millions of feet of HELIAX cable have gone into service over the past 30 years. Installations date back to the 1950s.

Long continuous lengths provide ease of installation and maintenance-free service not found in rigid coaxial lines or in other coaxial cables. The copper, corrugated outer conductors (and inner conductors of the larger sizes) provide a unique combination of strength and flexibility.

HELIAX coaxial cables are lighter and more flexible than smooth-wall aluminum cables, more permanent and trouble-free than braided cables and are electrically superior to both.

All HELIAX coaxial cables are jacketed for direct burial or for corrosive environmental conditions. Standard jacketing material is weather-resistant polyethylene suitable for operation down to −54°C (−65°F) and installation down to −40°C (−40°F).

Fire-retardant jacketing is also available for special applications.

Cables are shipped in boxes, cartons, or on disposable or returnable reels. When connector-fitted cable assemblies are ordered, the antenna end of the cable is wound on the outside of the coil and may be hoisted directly up the tower.

HELIAX and LDF are registered trademarks of Andrew Corp.

Inches (mm) **Type**	**1/2 (12.7)** **Foam**	**7/8 (22.23)** **Foam**	**1-1/4 (31.75)** **Foam**	**1-5/8 (41.28)** **Foam**	**7/8 (22.23)** **Air**	**1-5/8 (41.28)** **Air**	**2-1/4 (57.15)** **Air**	**1/4 (6.35)** **Superflexible**	**1/2 (12.7)** **Superflexible**
Decibel Coaxial Cable Number	DB2068	DB2078	DB2088	DB2086	DB2074	DB2077	DB2089	DB2047	DB2048
HELIAX Coaxial Cable Number	LDF4-50A	LDF5-50A	LDF6-50	LDF7-50A	HJ5-50	HJ7-50A	HJ12-50	FSJ1-50	FSJ4-50B
Attenuation dB/100 ft. (dB/100 m)									
50 MHz	0.479 (1.58)	0.257 (0.843)	0.191 (0.627)	0.156 (0.512)	*			1.29 (4.24)	0.732 (2.40)
88 MHz	0.641 (2.11)	0.345 (1.14)	0.257 (0.843)	0.210 (0.689)	0.57 (1.21)	0.207 (0.679)	0.169 (0.554)	1.73 (5.68)	0.982 (3.22)
174 MHz	0.914 (3.00)	0.496 (1.63)	0.368 (1.27)	0.304 (0.998)				2.47 (8.11)	1.394 (4.58)
400 MHz	1.42 (4.66)	0.781 (2.57)	0.578 (1.90)	0.482 (1.58)				3.85 (12.7)	2.18 (7.15)
512 MHz	1.62 (5.32)	0.896 (2.94)	0.663 (2.18)	0.556 (1.83)				4.43 (14.6)	2.49 (8.17)
960 MHz	2.29 (7.52)	1.28 (4.20)	0.945 (3.10)	0.80 (2.63)	1.27 (4.17)	0.70 (2.30)	0.589 (1.93)	6.35 (20.9)	3.50 (11.5)
Average Power Rating, kW									
50 MHz	2.69	7.74	13.4	19.3	**			1.02	2.91
88 MHz	2.00	5.75	9.94	14.33	6.4 (9.9)	14.4 (22.3)	20.1 (31.1)	0.75	2.17
174 MHz	1.40	4.00	6.97	9.95				0.53	1.53
400 MHz	0.91	2.55	4.41	6.27				0.33	0.98
512 MHz	0.79	2.22	3.84	5.44				0.29	0.86
960 MHz	0.56	1.55	2.70	3.77	1.85 (2.9)	4.3 (6.7)	5.75 (8.92)	0.20	0.60

*See page 186, Figure 7 for other frequencies.

**Condition A for extreme climates (condition B for moderate climates).

Foam-Dielectric Cables

HELIAX foam-dielectric coaxial cables are ideal for most antenna feeder systems that do not require a pressure path to the antenna. HELIAX foam-dielectric cables are available in sizes from ½″ to 1-5/8″ (12.7 to 41.28 mm). Superflexible versions are available for applications where flexibility is of primary importance.

In 1982 Andrew introduced a new series of HELIAX (identified by the "A" suffix) LDF cables that are lower in loss without any change in mechanical characteristics.

Low Loss

The low-loss foam dielectric offers attenuation performance approaching that of air-dielectric cables of similar size. Improvements in the foam dielectric for Types LDF4-50A, LDF5-50A, LDF7-50A and the new LDF6-50 result in even lower attenuation values than were previously available.

Weatherproof

Connector "O" ring seals, in conjunction with the annular corrugations in the outer conductor, provide a longitudinal moisture block. To eliminate differential expansion the dielectric is mechanically locked to the outer conductor and bonded to the inner conductor.

Self-Flaring Connectors

This patented* innovation results in simplified assembly, excellent electrical contact and high resistance to connector pull-off and twist-off. Each connector is designed for low VSWR up to the cutoff frequency of the cable.

Air-Dielectric Cable

HELIAX air-dielectric coaxial cables are ideal for antenna feeder systems which require a pressure path to the antenna. Compared with foam-dielectric cables, attenuation is lower and power handling capability is higher. Typical applications include 800/900 MHz land mobile radio and cellular telephone systems. HELIAX air-dielectric cables are available in sizes from 7/8″ to 2-1/4″ (22.23 to 57.15 mm). (Inquire for other sizes.)

Average Power

Andrew average power ratings are based on a VSWR of 1.0, atmospheric pressure and ambient temperature of 40°C (104°F).

There are two standard power ratings for air-dielectric cables. Condition A is recommended for installations in extreme climates. Condition B is recommended for installations in more moderate climates where exposure to high ambient temperatures and the resulting, somewhat higher, inner conductor temperatures exist for limited time periods.

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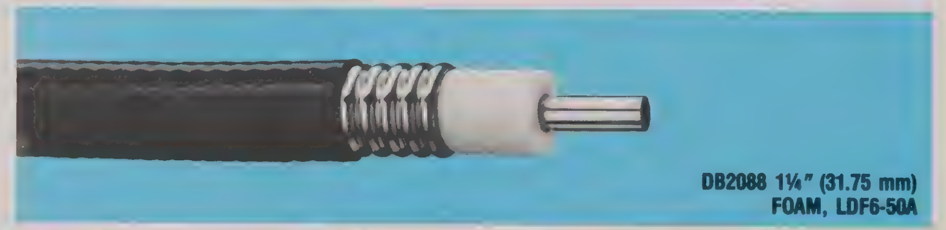
*Andrew United States Patent 4,046,451 and pending in other countries.
LDF and HELIAX are registered trademarks of Andrew Corporation.

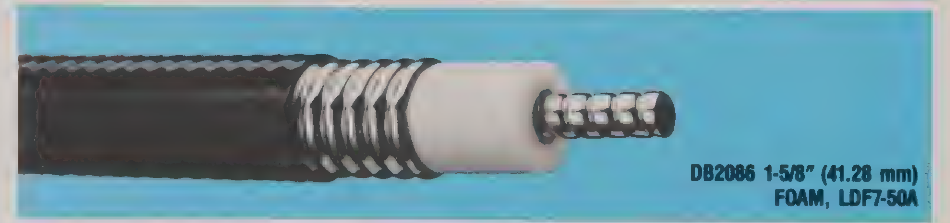
LDF® FOAM HELIAX® CABLES, 1/2″ (12.7 mm), 7/8″ (22.23 mm), 1-1/4″ (31.75 mm), 1-5/8″ (41.28)

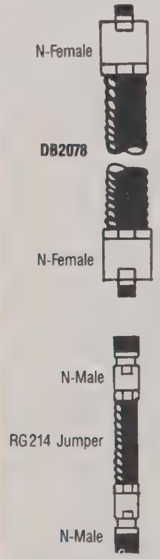
Decibel and its Factory Authorized Warehouses offer HELIAX cable in bulk or cut-to-length with connectors affixed. The connector kit model number indicates connectors provided. In addition, various jumper cables can be provided or deleted by using the appropriate connector kit model number.

DB2068 ½″ (12.7 mm) FOAM, LDF4-50A

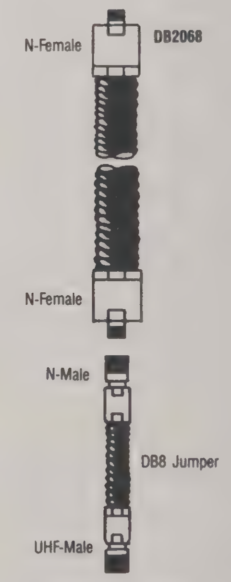
DB2078 7/8″ (22.23 mm) FOAM, LDF5-50A


DB2088 1¼″ (31.75 mm) FOAM, LDF6-50A

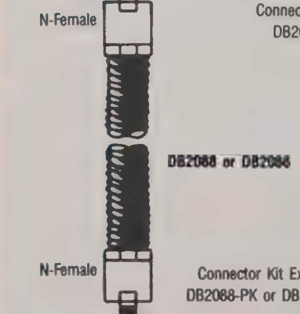

DB2086 1-5/8″ (41.28 mm) FOAM, LDF7-50A



Connector Kit Example
DB2078-NFNFW2



Connector Kit Example
DB2068-NFNFWK



Connector Kit Example
DB2088-PK or DB2086-PK

1/2″ (12.7 mm) HELIAX Description①

Model Number		Line Connectors		Jumper Connectors	
		Top	Bottom	Line	Equipment
DB2068	LDF4-50A ½″ (12.7 mm) foam COPPER HELIAX®, jacketed cable only (Order 43818-41 for Cellular 824-894 MHz special order)				
DB2068-NFNFPK	Connector Kit Installed LDF4-50A, no jumper	N-Female	N-Female	n/a	n/a
DB2068-UFNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-Female	N-Female	n/a	n/a
DB2068-NMNFPK	Connector Kit Installed LDF4-50A, no jumper	N-Male	N-Female	n/a	n/a
DB2068-UMNFPK	Connector Kit Installed LDF4-50A, no jumper	UHF-Male	N-Female	n/a	n/a
DB2068-NFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	N-Female	N-Female	N-Male	UHF-Male
DB2068-UFNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-Female	N-Female	N-Male	UHF-Male
DB2068-NMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	N-Male	N-Female	N-Male	UHF-Male
DB2068-UMNFWK	Connector Kit Installed LDF4-50A, with 8 ft. jumper	UHF-Male	N-Female	N-Male	UHF-Male
DB2068-NFNFW2	Connector Kit Installed LDF4-50A, with 8 ft. RG214 jumper	N-Female	N-Female	N-Male	N-Male

7/8″ (22.23 mm) HELIAX Description①

Model Number		Line Connectors		Jumper Connectors	
		Top	Bottom	Line	Equipment
DB2078	LDF5-50A 7/8″ (22.23 mm) foam COPPER HELIAX®, jacketed cable only (Order 42150B-48 for Cellular 824-894 MHz special order)				
DB2078-NFNFPK	Connector Kit Installed LDF5-50A, no jumper	N-Female	N-Female	n/a	n/a
DB2078-UFNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-Female	N-Female	n/a	n/a
DB2078-NMNFPK	Connector Kit Installed LDF5-50A, no jumper	N-Male	N-Female	n/a	n/a
DB2078-UMNFPK	Connector Kit Installed LDF5-50A, no jumper	UHF-Male	N-Female	n/a	n/a
DB2078-NFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	N-Female	N-Female	N-Male	UHF-Male
DB2078-UFNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-Female	N-Female	N-Male	UHF-Male
DB2078-NMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	N-Male	N-Female	N-Male	UHF-Male
DB2078-UMNFWK	Connector Kit Installed LDF5-50A, with 8 ft. jumper	UHF-Male	N-Female	N-Male	UHF-Male
DB2078-NFNFW2	Connector Kit Installed LDF5-50A, with 8 ft. RG214 jumper	N-Female	N-Female	N-Male	N-Male

1¼″ (31.25 mm) HELIAX Description①

Model Number		Line Connectors	
		Top	Bottom
DB2088	LDF6-50 1¼″ (31.25 mm) foam COPPER HELIAX®, jacketed cable only (Order 205360 for Cellular)		
DB2088-PK	Connector Kit Installed LDF6-50, no jumper	N-Female	N-Female

1-5/8″ (41.28 mm) HELIAX Description①

Model Number		Line Connectors	
		Top	Bottom
DB2086	LDF7-50A 1-5/8″ (41.28 mm) foam COPPER HELIAX®, jacketed cable only (Order 42151A-18 for Cellular)		
DB2086-PK	Connector Kit Installed LDF7-50A, no jumper	N-Female	N-Female

①**Connector Kits on Foam-Dielectric cables (1/2″, 7/8″, 1-1/4″, and 1-5/8″) include installation of connectors and jumper as specified, taped and SCOTCHKOTED® and VAPOR-WRAP®.**

Electrical Data

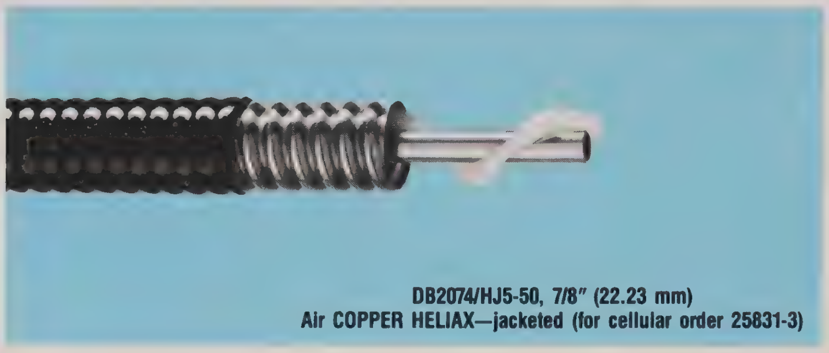
Nominal Size — in. (mm)	1/2 (12.7)	7/8 (22.23)	1-1/4 (31.75)	1-5/8 (41.28)
Characteristic Impedance — ohms	50	50	50	50
Outer Conductor, Inner Conductor	Copper	Copper	Copper	Copper
Maximum Frequency — GHz	8.8	4.8	3.3	2.5
Velocity — percent	88	89	89	88
Peak Power Rating — kW	19	44	90	145

Mechanical Data

Inches (mm)	1/2 (12.7)	7/8 (22.23)	1-1/4 (31.75)	1-5/8 (41.28)
Diameter over Jacket — in. (mm)	0.64 (16)	1.1 (28)	1.6 (40)	2 (50.8)
Minimum Bending Radius — in. (mm)	5 (125)	10 (250)	15 (380)	20 (508)
Cable Weight — lb./ft. (kg/m)	.15 (.22)	.33 (.49)	.66 (.98)	.92 (1.36)
Bending Moment — ft.-lb. (N-m)	—	12 (16.3)	39 (53)	—
Flat Plate Crush Strength — lb./in. (kg/mm)	—	80 (1.4)	138 (2.4)	—
Number of Bends, Minimum (Typical)	—	15 (50)	15 (50)	—

CABLES AIR DIELECTRIC HELIAX®, 7/8" (22.23 mm), 1-5/8" (41.28 mm), 2-1/4" (57.15 mm)

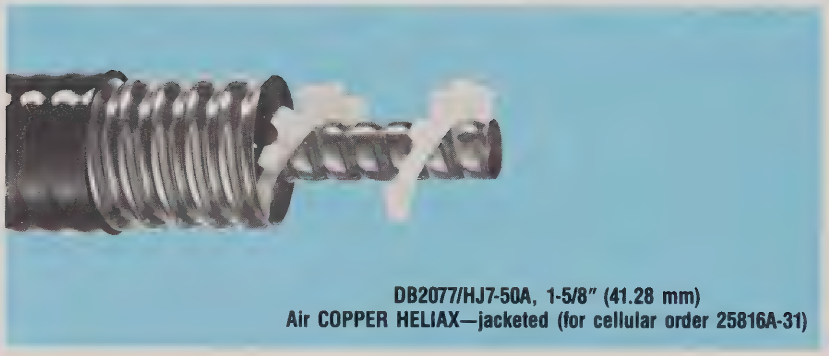
Decibel and its Factory Authorized Warehouses offer Andrew Air Dielectric HELIAX cable and accessories.



DB2074/HJ5-50, 7/8" (22.23 mm)
Air COPPER HELIAX—jacketed (for cellular order 25831-3)

DB2074 — Type HJ5-50

Nominal Size — in. (mm)	7/8 (22.23)
Characteristic Impedance — ohms	50
Outer Conductor	Copper
Diameter over Jacket — in. (mm)	1.11 (28.3)
Minimum Bending Radius — in. (mm)	10 (250)
Cable Weight — lb./ft. (kg/m)	0.54 (0.8)
Bending moment — ft.-lb. (N-m)	25 (34)
Flat Plate Crush Strength — lb./in. (kg/mm)	250 (4.5)
Number of Bends, Minimum (Typical)	15 (20)
Velocity — percent	91.6
Peak Power Rating — kW	44



DB2077/HJ7-50A, 1-5/8" (41.28 mm)
Air COPPER HELIAX—jacketed (for cellular order 25816A-31)

DB2077 — Type HJ7-50

Nominal Size — in. (mm)	1-5/8 (41.28)
Characteristic Impedance — ohms	50
Outer Conductor	Copper
Diameter over Jacket — in. (mm)	2 (51)
Minimum Bending Radius — in. (mm)	20 (508)
Cable Weight — lb./ft. (kg/m)	1.04 (1.55)
Bending moment — ft.-lb. (N-m)	30 (41)
Flat Plate Crush Strength — lb./in. (kg/mm)	175 (3.1)
Number of Bends, Minimum (Typical)	15 (30)
Velocity — percent	92.1
Peak Power Rating — kW	145

ANDREW® HJ12-50 HELIAX®

DB2089/HJ12-50, 2-1/4" (57.15 mm)
Air COPPER HELIAX—jacketed (for cellular order 207760)

DB2089 — Type HJ12-50

Nominal Size — in. (mm)	2-1/4 (57.15)
Characteristic Impedance — ohms	50
Outer Conductor	Copper
Diameter over Jacket — in. (mm)	2.38 (60.4)
Minimum Bending Radius — in. (mm)	22 (560)
Cable Weight — lb./ft. (kg/m)	1.16 (1.73)
Velocity — percent	93.1
Peak Power Rating — kW	210

Ordering Information for Cables and Connectors

Decibel offers HELIAX cables cut to length either with connectors fitted at one or both ends or with connectors unfitted.

When ordering, specify the Decibel/Andrew cable type number, length in feet or meters, connector kit or type numbers and whether "fitted" or "unfitted." Contact Decibel for non-standard terminations. When fitted connectors on a cable are different, specify which one should be "first off" the reel.

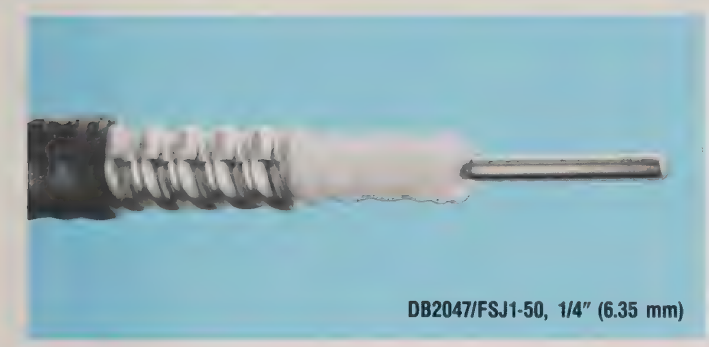
Cables and connectors are shipped in boxes or cartons or on disposable or returnable reels. When connector-fitted cables are ordered, the antenna end of the cable is wound on the outside of the coil so that it can be hoisted directly up the tower. Any trimming should be done at the transmitter end.

Standard cable cutting tolerance is +2%, –0%. Closer tolerances are available on special order.

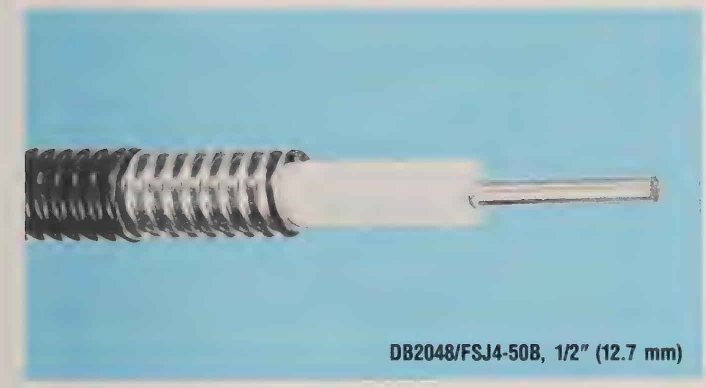
CABLES SUPERFLEXIBLE HELIAX® AND ACCESSORIES, RADIAX AND ACCESSORIES

DECIBEL

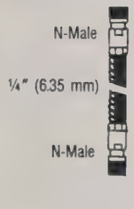
Decibel and its Factory Authorized Warehouses offer Andrew Superflexible HELIAX cable in bulk or cut-to-length with connectors affixed.

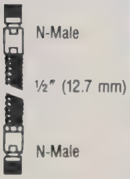

DB2047/FSJ1-50, 1/4″ (6.35 mm)

DB2047 — Type FSJ1-50	
Nominal Size — in. (mm)	1/4 (6.35)
Characteristic Impedance — ohms	50
Outer Conductor	Copper
Maximum Frequency — GHz	19
Velocity — percent	78
Peak Power Rating — kW	5
Diameter over Jacket — in. (mm)	.30 (7.6)
Minimum Bending Radius — in. (mm)	1 (25)
Cable Weight — lb./ft. (kg/m)	.06 (.08)
Flat Plate Crush Strength — lb./in. (kg/mm)	100 (1.8)
Hydrostatic Crush Strength — lb./in.^{2} (kg/cm^2)	2000 (140)


DB2048/FSJ4-50B, 1/2″ (12.7 mm)

DB2048 — Type FSJ4-50B	
Nominal Size — in. (mm)	1/2 (12.7)
Characteristic Impedance — ohms	50
Outer Conductor	Copper
Inner Conductor	Copper-Clad Aluminum
Diameter over Jacket — in. (mm)	.52 (13.2)
Minimum Bending Radius — in. (mm)	1.25 (32)
Cable Weight — lb./ft. (kg/m)	.14 (.21)
Bending moment — ft.-lb. (N-m)	2 (2.7)
Flat Plate Crush Strength — lb./in. (kg/mm)	110 (2)
Number of Bends, Minimum (Typical)	20 (50)
Maximum Frequency — GHz	10.2
Velocity — percent	81
Peak Power Rating — kW	7.5





Superflexible HELIAX Description ①

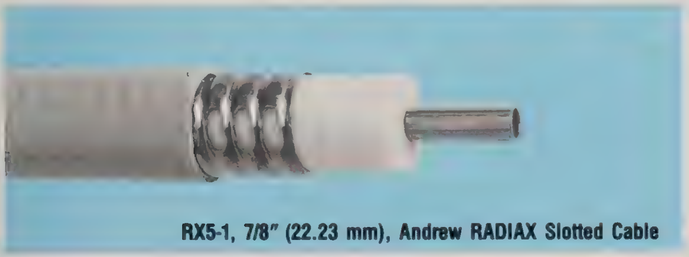
Model Number		Line Connectors Top	Line Connectors Bottom
DB2047	FSJ1-50 ¼″ (6.35 mm) Superflexible HELIAX®, jacketed cable only		
DB2047-PK	Connector Kit Installed FSJ1-50, no jumper	N-Male	N-Male
DB2048	FSJ4-50B ½″ (12.7 mm) Superflexible HELIAX®, jacketed cable only		
DB2048-PK	Connector Kit Installed FSJ4-50B, no jumper	N-Male	N-Male

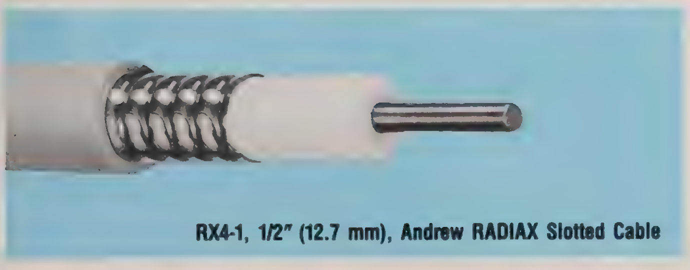
①Connector Kits on Superflexible Cables include connectors installed and VAPOR-WRAP®

RADIAX* SLOTTED CABLE

Decibel and its Factory Authorized Warehouses offer Andrew RADIAX slotted coaxial cable and accessories.

RADIAX slotted coaxial cable* is designed to function as a continuous antenna. The slots in the corrugated copper cable allow a controlled portion of the transmitted RF signal to radiate along the entire length of the cable. Conversely, a signal transmitted near the cable will couple into these slots and be carried along the cable.


RX5-1, 7/8″ (22.23 mm), Andrew RADIAX Slotted Cable


RX4-1, 1/2″ (12.7 mm), Andrew RADIAX Slotted Cable

Because of its broadband capability, a single RADIAX system can simultaneously handle two or more separate communications systems. Both horizontally and vertically polarized signals are radiated. Oil and moisture have no appreciable effect on attenuation. This results in a low-cost, maintenance-free installation.

The standard jacketing material is brown polyethylene. Fire-retardant jacketed cables are listed by Underwriters' Laboratories, Inc., and are gray in color to allow quick identification.

The primary objective in the design of a RADIAX system is to provide an adequate signal at all points in the system. For one-way applications, such as paging, calculations must be performed from the base station to the portable. In two-way applications, calculations must be performed from both base to portable unit and portable unit to base. Normally, portable to base is more critical due to the low transmit power level of the hand-held unit.

Call Decibel's Systems Engineering for assistance with your requirements. Accessories are available to complete your system.

*RADIAX is patented in the United States, Australia, Canada, and United Kingdom.

DB8, VB8 Coaxial Cable and Connector Kits for Customized Lengths

DB8 Coaxial Cable and Connector Kits

Model Number	Description	Top Connector (Antenna End)	Bottom Connector
DB2029	DB8A/U, Cable Only		
DB2029-NFNF	DB8A/U, Connectors Installed	N-Female	N-Female
DB2029-NMNF	DB8A/U, Connectors Installed	N-Male	N-Female
DB2029-NFUM	DB8A/U, Connectors Installed	N-Female	UHF-Male
DB2029-NMUM	DB8A/U, Connectors Installed	N-Male	UHF-Male
DB2029-UMUM	DB8A/U, Connectors Installed	UHF-Male	UHF-Male
DB2029-NMNM	DB8A/U, Connectors Installed	N-Male	N-Male

VB8 Coaxial Cable and Connector Kits

Model Number	Description	Top Connector (Antenna End)	Bottom Connector
DB2040	VB8 VAPOR-BLOC® Cable Only		
DB2040-NFNF	VB8 VAPOR-BLOC, Connectors Installed	N-Female	N-Female
DB2040-NMNF	VB8 VAPOR-BLOC, Connectors Installed	N-Male	N-Female
DB2040-NFUM	VB8 VAPOR-BLOC, Connectors Installed	N-Female	UHF-Male
DB2040-NMUM	VB8 VAPOR-BLOC, Connectors Installed	N-Male	UHF-Male
DB2040-UMUM	VB8 VAPOR-BLOC, Connectors Installed	UHF-Male	UHF-Male
DB2040-NMNM	VB8 VAPOR-BLOC, Connectors Installed	N-Male	N-Male

NOTE: Model Numbers DB2029 and DB2040, when ordered with connector kits, include two connectors and two 4″ (101.6 mm) VAPOR-WRAP® For tie wires see DB11639 or DB11649.

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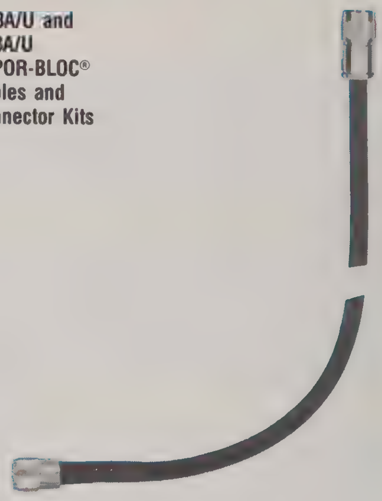
VAPOR-BLOC and VAPOR-WRAP are registered trademarks of Decibel Products, Inc.

DB8A/U and VB8A/U VAPOR-BLOC® Cables and Connector Kits



RG8, RG214, RG142 and HELIAX® Foam and Superflexible Standard Length Coaxial Cable Assemblies

RG8 Coaxial Cable Assemblies

Model Number	Description	Connector	Connector
DB11386	RG8 Type Flexible Cable, 8′ (2.43 m)	N-Male	N-Male
DB11387	RG8 Type Flexible Cable, 8′ (2.43 m)	N-Male	N-Female
DB11388	RG8 Type Flexible Cable, 8′ (2.43 m)	N-Male	UHF-Male

RG214 Coaxial Cable, No Connectors

Model Number	Description	Connector	Connector
DB11601	RG214 Type Double Shield, 25′ (7.58 m) Flexible Cable		
DB11602	RG214 Type Double Shield, 50′ (15.24 m) Flexible Cable		

RG214 Coaxial Cable Assemblies

Model Number	Description	Connector	Connector
DB11391	RG214 Type Double Shield, 8′ (2.43 m) Flexible Cable	N-Male	N-Male
DB11392	RG214 Type Double Shield, 8′ (2.43 m) Flexible Cable	N-Male	N-Female
DB11393	RG214 Type Double Shield, 8′ (2.43 m) Flexible Cable	N-Male	UHF-Male
DB11394	RG214 Type Double Shield, 8′ (2.43 m) Flexible Cable	UHF-Male	UHF-Male

RG142 Coaxial Cable, No Connectors

Model Number	Description	Connector	Connector
DB11616	RG142 Cable, 25′ (7.58 m) Flexible Cable		
DB11617	RG142 Cable, 50′ (15.24 m) Flexible Cable		

RG142 Coaxial Cable Assemblies

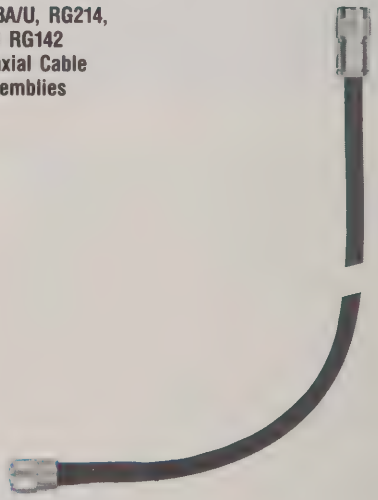
Model Number	Description	Connector	Connector
DB11607	RG142, 1.5′ (.455 m) Flexible Lead	N-Male	N-Male
DB11608	RG142, 3′ (.91 m) Flexible Lead	N-Male	N-Male
DB11396	RG142, 8′ (2.43 m) Flexible Lead	BNC-Male	UHF-Male
DB11397	RG142, 8′ (2.43 m) Flexible Lead	BNC-Male	N-Male
DB11398	RG142, 8′ (2.43 m) Flexible Lead	BNC-Male	N-Female

HELIAX Superflexible Coaxial Cable Assemblies①

Model Number	Description	Connector	Connector
DB11882	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	N-Male	N-Male
DB11883	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	N-Male	UHF-Male
DB11884	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	UHF-Male	UHF-Male
DB11885	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	BNC-Male	UHF-Male
DB11886	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	BNC-Male	N-Male
DB11889	¼″ (6.35 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	Phono	UHF
DB11888	½″ (12.7 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	N-Male	N-Female
DB11891	½″ (12.7 mm) HELIAX Superflexible Cable, 8′ (2.43 m)	N-Male	N-Male
DB11891-6	½″ (12.7 mm) HELIAX Superflexible Cable, 6′ (1.82 m)	N-Male	N-Male
DB11891-3	½″ (12.7 mm) HELIAX Superflexible Cable, 3′ (.91 m)	N-Male	N-Female

①Flexible leads have Andrew connectors, except Phono type.

RG8A/U, RG214, and RG142 Coaxial Cable Assemblies



DB11888 ½″ (12.77) HELIAX® Superflexible Cable Assembly

HELIAX® Foam Copper Coaxial Cable Assemblies①

Model Number	Description	Connector	Connector
DB11887	½″ (12.7 mm) LDF Foam, 6′ (1.82 m)	N-Male	N-Female
DB11890	½″ (12.7 mm) LDF Foam, 6′ (1.82 m)	N-Male	N-Male
DB11890-3	½″ (12.7 mm) LDF Foam, 3′ (.91 m)	N-Male	N-Male
DB11890	½″ (12.7 mm) LDF Foam, 6′ (1.82 m)	N-Male	N-Male
DB11890-10	½″ (12.7 mm) LDF Foam, 10′ (3.04 m)	N-Male	N-Male
DB11891-3	½″ (12.7 mm) Superflexible, 3′ (.91 m)	N-Male	N-Male
DB11891-6	½″ (12.7 mm) Superflexible, 6′ (1.82 m)	N-Male	N-Male
DB11891-10	½″ (12.7 mm) Superflexible, 10′ (3.04 m)	N-Male	N-Male
DB11890-15	½″ (12.7 mm) LDF Foam, 15′ (4.57 m)	N-Male	N-Male
DB11890-20	½″ (12.7 mm) LDF Foam, 20′ (6.09 m)	N-Male	N-Male
DB11890-25	½″ (12.7 mm) LDF Foam, 25′ (7.62 m)	N-Male	N-Male
DB11890-30	½″ (12.7 mm) LDF Foam, 30′ (9.14 m)	N-Male	N-Male
DB11891-15	½″ (12.7 mm) Superflexible, 15′ (4.57 m)	N-Male	N-Male
DB11891-20	½″ (12.7 mm) Superflexible, 20′ (6.09 m)	N-Male	N-Male
DB11891-25	½″ (12.7 mm) Superflexible, 25′ (7.62 m)	N-Male	N-Male
DB11891-30	½″ (12.7 mm) Superflexible, 30′ (9.14 m)	N-Male	N-Male

①Flexible leads have Andrew connectors.

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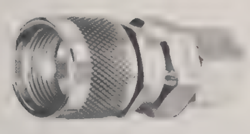
VAPOR-BLOC and VAPOR-WRAP are registered trademarks of Decibel Products, Inc.

CONNECTORS FOR HELIAX® COAXIAL CABLE

DB2047 (FSJ1-50) ¼″ (6.35 mm) Superflexible HELIAX Connectors

DB11350 (41SW) Type N-Male Connector. One to a package.



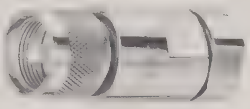
DB11351 (41SP) Type UHF-Male Connector. One to a package.

DB11352 (40622) BNC Male Connector. One to a package.

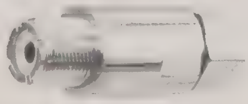
DB2048 (FSJ4-50B) ½″ (12.7 mm) Superflexible HELIAX Connectors

DB11369 (44ASW) Type N-Male Connector. One to a package.

DB11376 (44ASN) Type N-Female Connector. One to a package.

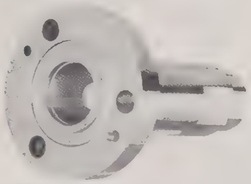


DB11377 (44ASP) UHF-Male to mate with A SO-239A Connector. One to a package.



DB11378 (44ASU) UHF-Female to mate with a PL-259A Connector. One to a package.

DB11379 (49600) N-Male right angle connector. One to a package.



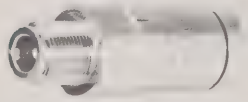
DB11365 (44ASR) 7/8″ (22.23 mm) EIA Flange without gas barrier. One to a package.

DB2068 (LDF4-50A) ½″ (12.7 mm) Foam HELIAX Connectors

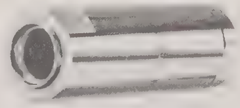
DB11370 (L44P) UHF-Male to mate with SO-239A Connector. One to a package.

DB11371 (L44U) UHF-Female to mate with a PL-259A Connector. One to a package.

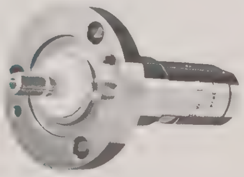
DB11372 (L44W) N-Male to mate with a UG-23 Connector. One to a package.



DB11373 (L44N) N-Female to mate with a UG-21 Connector. One to a package.



DB11374 (L44Z) Splice for ½″ (12.7 mm) Foam HELIAX Cable. One to a package.



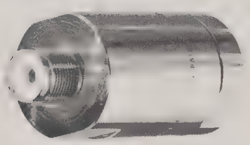
DB11375 (L44R) 7/8″ (22.23 mm) EIA Flange without gas barrier. Includes line connector. One to a package.

CONNECTORS FOR HELIAX® COAXIAL CABLES CONTINUED

DECIBEL

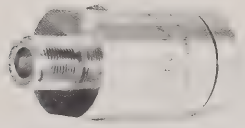
DB2078 (LDF5-50A) 7/8" (22.23 mm) Foam HELIAX Connectors

DB11380 (L45P) Type UHF-Male unites with S0-239A Connector. One to a package.



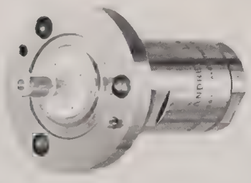
DB11381 (L45U) Type UHF-Female mates with PL259A Connector. One to a package.

DB11382 (L45W) Type N-Male mates with a UG-23 Connector. One to a package.



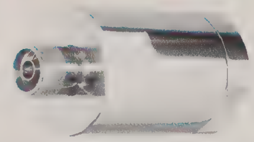
DB11383 (L45N) Type N-Female mates with UG-21 Connector. One to a package.

DB11384 (L45Z) Splice for mating two ends of LDF5-50A cable. One to a package.

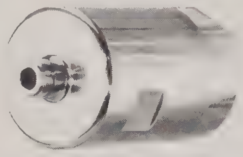


DB11385 (L45R) 7/8" (22.23 mm) EIA flange without gas barrier. Includes inner connector. One to a package.

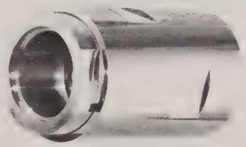
DB2088 (LDF6-50) 1¼" (31.75 mm) Foam HELIAX Connectors



DB11363 (L46W) Type N-Male mates with UG-23. Includes pressure port.



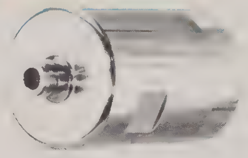
DB11390 (L46N) Type N-Female mates with UG-21. Includes pressure port.



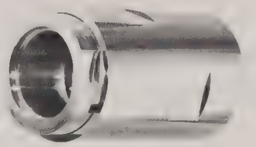
DB11395 (L46Z) Splice for mating two ends of LDF6-50 cable. One to a pkg.

DB11664 (L46S) 7/8" (22.23 mm) EIA Flange without gas barrier. Includes inner connector and pressure port. One to a package.

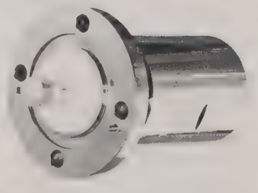
DB2086 (LDF7-50A) 1-5/8" (41.28 mm) Foam HELIAX Connectors



DB11336 (L47N) Type N-Male mates with a UG-23 Connector. One to a package.



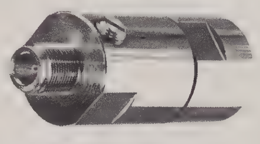
DB11337 (L47Z) Splice for mating two ends of LDF7-50A Cable. One to a package.



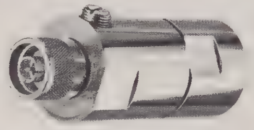
DB11338 1-5/8" (41.28 mm) EIA Flange without gas barrier. Includes inner connector. One to a package.

DB2074 (HJ5-50) 7/8" (22.23 mm) Air Dielectric Coaxial Cable Connectors

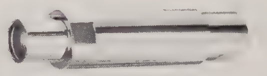
DB11355 (75AR) 7/8" (22.23 mm) EIA Flange without gas barrier. Includes inner connector. One to a package.



DB11356 (75AN) Type N-Female mates with UG-21 connector. One to a package.

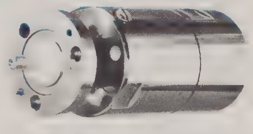


DB11357 (75AW) Type N-Male mates with a UG-23 connector. One to a package.



DB11358 (75AZ) Splice for mating two ends of HJ5-50 cable. One to a package.

DB2077 (HJ7-50) 1-5/8" (41.28 mm) Air Dielectric Coaxial Cable Connectors



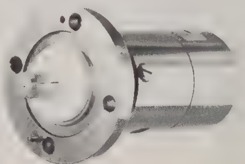
DB11366 (87S) Reducer, 7/8" (22.23 mm) Flange without gas barrier. Includes inner conductor. One to a package.

DB11367 (87N) Type N-Female mates with UG-21 connector. One to a package.

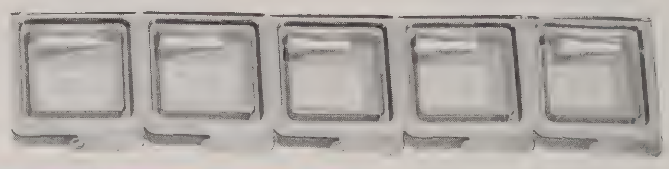
DB11368 (87Z) Splice for mating two ends of HJ7-50 cable. One to a package.

DB2089 (HJ12-50) 2¼" (57.15 mm) Air Dielectric Coxial Cable Connectors

DB11670 (82N) Type N-Female connector. One to a package.



DB11671 (82R) 1-5/8" (41.28 mm) EIA Flange connector. One to a package.



PIN-PACKS Replacement Connector Pins

Available in strips of 5 connector pins.

DB11666-1 (45124-5) For L44N (NF) Connector.

DB11666-2 (43265-5) For L44W (NM) Connector.

DB11666-3 (43157-2) For L45N (NF) Connector.

DB11666-4 (43158-5) For L45W (NM) Connector.

HELIAX is a registered trademark of Andrew Corp.

CONNECTORS UHF AND N-TYPE COAXIAL CONNECTORS AND ADAPTORS

DECIBEL

Most of these connectors are either Type UHF connector or Type N connector. Regardless of manufacturer or type of cable, any UHF Male Connector will mate with any UHF Female Connector and any Type N-Male connector will mate with any Type N-Female Connector.

The UHF Connector

UHF is probably the most popular connector since it is readily available and simple to install. It is a non-constant impedance connector generally suitable for use up to 300 MHz. At the higher frequencies, the VSWR mismatch of the connector might be noticeable in antenna systems.

The Type N Connector

Electrically superior to the UHF type, Type N is a constant impedance device usable up to 10,000 MHz. The improved versions include "captivated" (held in a fixed position) center pins.

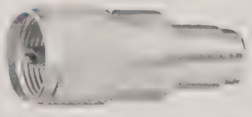
Weatherproofing

One drop of moisture within a connector can have the same effect as a direct short between the center and outer conductor of the cable. Connectors must be weatherproofed. One method is the DB11317 VAPOR-WRAP® Connector Sealing Kit. This pliable plastic material completely seals the connectors and is reusable.

Ordering Information

Connectors are packaged and sold in quantity. For example an order for one DB11301 is for one package containing 12 PL259 connectors.

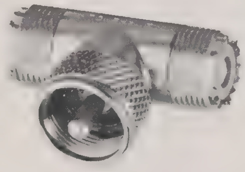
VAPOR-WRAP and VAPOR-BLOC are registered trademarks of Decibel Products, Inc.



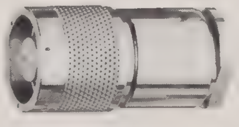
DB11301 (PL259) UHF Male Connector. Mates with PL258. Used on RG8, RG214 and similar size cable. Sold 12 to a package.

DB11302 (UG175) Reducer. Reduces opening of PL259 for use with RG58, RG59 and similar size cable. Sold 24 to a package.

DB11303 (PL258) Dual Female. Mates two UHF Male Connectors. Sold 6 to a package.

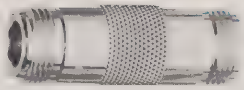


DB11304 (M358) UHF T Junction. Dual Female with UHF Male side port. Sold 2 to a package.

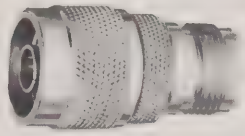


DB11305 (UG1185) Type N-Male. Fully captivated center pin. For use with RG8, RG214 and similar cable. Sold 3 to a package.

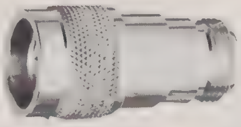
DB11306 (UG1186) Type N-Female. Fully captivated center pin. For use with RG8, RG214 and similar cable. Sold 3 to a package.



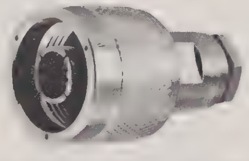
DB11307 (UG29B/U) Type N Junction. Dual Female. Mates two Type N-Male connectors. Sold 4 to a package.



DB11308 (UG146) Adaptor. UHF Female on one end and Type N-Male on other end. Sold 2 to a package.

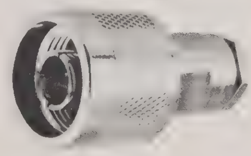


DB11309 (UG83) Adaptor UHF Male on one end and Type N-Female on other end. Sold 2 to a package.

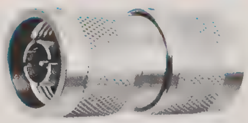


DB11310 (3452S-1001) Type N-Male connector for use with AA3096 and RG303 Type cables. Sold 2 to a package.

DB11311 (UG88) BNC Male Connector. For use on RG58 and RG142 type cable. Sold 5 to a package.



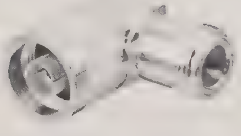
DB11312 (UG536) Type N-Male for use with RG58 and RG142 type cables. Sold 4 to a package.



DB11313 (UG57) Type N-Male to N-Male juntion. Sold 2 to a package.

DB11319 (UG28) Type N T Junction. Three Female ports. Sold 2 to a package.

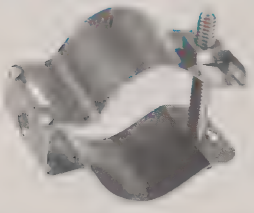
DB11325 (UG274) BNC T Adaptor. Dual Female with Male side port. Sold 2 to a package.



DB11328 (UG27D/U) N-Male to N-Female right angle adaptor. Sold 2 to a package.

VAPOR-BLOC® cable can use standard RG8A/U Connectors

VAPOR-BLOC cable offers a unique "double defense" against the usual reasons for cable deterioration. Its outer jacket is especially formulated to resist moisture, sunlight and corrosion. A new inert semi-liquid compound fills all space between the polyethylene dielectric and the outer jacket, flooding the copper braid. This compound adheres to the inside of the jacket, the braid and the dielectric material. The flooding compound is not affected by temperature, condensation or time. If the outer jacket is cut, the compound prevents moisture or gases from migrating beyond the immediate area. The viscosity of this compound permits it to actually "heal" small cuts that in ordinary RG type cable would lead to eventual failure. VAPOR-BLOC also features a solid center conductor instead of the usual twisted wire center conductor in order to block the travel of moisture along the center of the cable. The electrical characteristics of VAPOR-BLOC cable are comparable in all respects to equivalent RG type cable and it can be used with standard connectors.



Hanger Kit of 10 pieces. Stainless steel. 3/8″ (9.53 mm) mounting hardware not included.

Model Number	Cable Size	Maximum Spacing
DB11658	½″ (12.7 mm)	3′ (1 m)
DB11656	7/8″ (22.23 mm)	3′ (1 m)
DB11661	1¼″ (31.75 mm)	3′ (1 m)
DB11655	1-5/8″ (41.28 mm)	3′ (1 m)

Snap-In Hanger Kit of 10 pieces. Mounts to pre-punched ¾″ (19 mm) holes on self-supporting towers or, when used with adaptors, to any tower. Guyed tower transmission support systems can also accommodate snap-in hanger when specified. Made of heavy guage stainless steel.

½″ (12.7 mm) cable	DB11665-1
7/8″ (22.23 mm) cable	DB11665-2
1¼″ (31.75 mm)	DB11665-3
1-5/8″ (41.28 mm)	DB11665-4

Hoisting Grip. Used to hoist and support transmission lines. Use at 200′ (60.96 m) intervals.

DB11641 for ½″ (12.7 mm) jacketed cable.

DB11642 for 7/8″ (22.23 mm) jacketed copper cable.

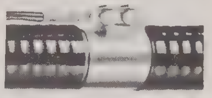
DB11643 for 1¼″ (31.75 mm) and 1-5/8″ (41.28 mm) jacketed copper cable.

DB11901 Weather Resistant Filament Tape. Used to secure cable to masts, etc. ½″ (12.7 mm)×60 yards (54.86 m) per roll.

Round Member Adaptor Kit of 10 pieces. Stainless steel clamps to mount ½″ (12.7 mm) to 4″ (101.6 mm) cable hangers to round support members.

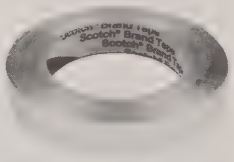
DB11652 Quick Release 1½″ (38.1 mm) to 3½″ (88.9 mm)
DB11360 1″ (25.4 mm) - 2″ (50.8 mm)
DB11361 2″ (50.8 mm) - 3″ (76.2 mm)
DB11362 3″ (76.7 mm) - 4″ (101.6 mm)

DB11651 Stainless Steel Wraplock 100′ (30.48 m) complete with fastener and ratchet. Use to attach ¼″ (6.35 mm) to 7/8″ (22.23 mm) insulated hangers to round members. Not to be used to attach cable directly to towers.



Grounding Strap Kit. Used to ground cable to tower. Solid copper non-braided strap comes preassembled with ground cable and connecting hardware for jacketed or unjacketed copper cable.

DB11640 for ½″ (12.7 mm) cable.
DB11644 for 7/8″ (22.23 mm) cable.
DB11662 for 1¼″ (31.75 mm) cable.
DB11645 for 1-5/8″ (41.28 mm) cable.



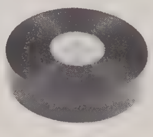
DB11902 Aluminum Tape. Used to protect DB11901 tape against sunlight and general weather deterioration. Long life. ¾″ (19.05 mm) × 60 yards (54.86 m) per roll.

DB11654 Angle Adaptor Kit of 10 pieces. Stainless Steel. For mounting ½″ (12.7 mm) to 4″ (101.6 mm) cable hangers to angle tower members up to 7/8″ (22.23 mm) thick. Includes hanger attachment hardware.

DB11638 Nylon Cable Tie Kit of 50 pieces. Weather resistant straps for attaching ¼″ (6.35 mm) to 7/8″ (22.23 mm) cables directly to tower members. Maximum spacing 3′ (.91 m).

DB11649 Tie Wire. Copperweld. Use at 3′ (.91 m) intervals to attach transmission line to tower leg. For 7/8″ (22.23 mm) or smaller line. Package contains 100 18″ (457.2 mm) tie wires.

DB11639 Jacketed Tie Wires. Package of 20.



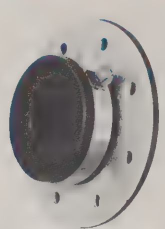
DB11903 Cold Weather Tape. All purpose electrical grade. Use to weatherproof connectors, etc. ¾″ (19.05 mm) × 66′ (20.12 m). Pack of 4 rolls.

vapor-wrap
GRIPS TO BLOC MOISTURE

DB11316 VAPOR-WRAP® sealant for weatherproofing connector junctions. 3″ (76.2 mm) × 50′ (15.24 m) roll.

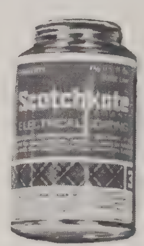
DB11317 VAPOR-WRAP® for weatherproofing connector junctions, 30 per package, 15 ea. 3″×4″ (76.2×101.6 mm), 15 ea. 3″×8″ (76.2×203.2 mm).

DB11667-1 Hardware Kit of 10 pieces, 3/8″ (9.53 mm) fillister-head bolts, lock washers and nuts for attachment of hangers to drilled tower members. 1″ (25.4 mm) long.



Single Entrance Wall/Roof Feed-Thru Assembly. Includes rubber boot, clamp and galvanized steel plate.

DB11646 for ½″ (12.7 mm) cable
DB11647 for 7/8″ (22.23 mm) cable.
DB11663 for 1¼″ (31.75 mm) cable.
DB11648 for 1-5/8″ (41.28 mm) cable.



DB11904 SCOTCHKOTE® Electrical Coating electrical grade, fast drying sealing agent in brushtop can. Provides extra protection to tapes, etc. Pack of one 15 oz. (.43 kg) can.

DB11905 RTV Sealant to seal connector joints or any small opening requiring protection. Cures to a rubber solid when exposed to air. 3 oz. (.09 kg) tube. Pack of one tube.

Shrink tube. For weatherproofing coaxial cable and connector junctions. Can be field applied without special tools.

DB11907 for ½″ (12.7 mm) HELIAX® and RG8 Assemblies, 4 per package.

DB11908 for 7/8″ (22.23 mm) HELIAX Assemblies, 4 per package.

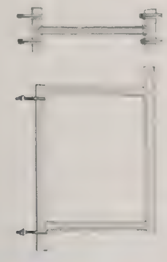
HELIAX and VAPOR-WRAP are registered trademarks of Decibel Products, Inc.
SCOTCHKOTE is a registered trademark of 3-M Company.

MOUNTING BRACKETS, CLAMPS AND KITS

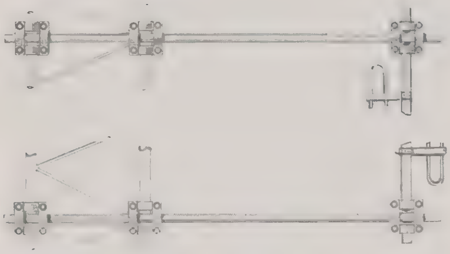
DECIBEL

BASE STATION ANTENNA SIDE MOUNT KITS

Heavy duty side mount kits include all brackets, clamps and hardware to mount antenna to tower leg. The main support pieces are fabricated of galvanized steel, and the stainless steel V-bolts (supplied) fit round tower members to 3″ (76.2 mm) OD, angular members to 2″ (50.8 mm) 90°, or 2.6″ (66.04 mm) 60°.



DB5001
DB5002



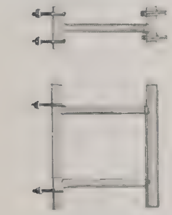
DB5004 shown on tower with DB224-style antenna.

DB5001 SIDE MOUNT KIT for DB222, DB224, DB264, DB304, DB314 and DB315. Includes top sway brace.

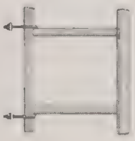
Net weight — lbs/kg	21 (9.5)
Shipping weight — lbs/kg	23 (10.45)

DB5002 SIDE MOUNT KIT for DB506W and DB506WM. Includes top sway brace.

Net weight — lbs/kg	19 (8.63)
Shipping weight — lbs/kg	21 (9.54)



DB5012



DB5007

DB5007 SIDE MOUNT KIT for DB404, DB536, DB580, DB553, DB803, and DB806. Bottom brace only.

Net weight — lbs/kg	11 (5.00)
Shipping weight — lbs/kg	13 (5.91)

DB5012 SIDE MOUNT KIT for DB408, DB411, DB413, DB420. Includes top sway brace.

Net weight — lbs/kg	19 (8.63)
Shipping weight — lbs/kg	21 (9.54)

DB5009 SIDE BY SIDE MOUNTING KIT for dual array antennas DB436, DB437 and DB438.

Net weight — lbs/kg	11 (5.00)
Shipping weight — lbs/kg	13 (5.91)

DB5018 SIDE BY SIDE MOUNTING KIT for quad array antennas DB436, DB437, and DB438.

Net weight — lbs/kg	22 (10.00)
Shipping weight — lbs/kg	24 (10.91)

DB5020 SIDE BY SIDE MOUNTING KIT for dual array antennas DB292.

Net weight — lbs/kg	58 (26.36)
Shipping weight — lbs/kg	60 (27.22)

DB370 MOUNTING CLAMP KITS

For mounting antenna to round members up to 2.75″ (69.8 mm) OD or angle members up to 1.94″ (49.2 mm) for 90° or 2.38″ (60.4 mm) for 60°. No center weld section, but includes four straps per clamp for spacing adjustment. Galvanized steel, set of two.

Net weight — lbs/kg	7 (3.18)
Shipping weight — lbs/kg	8 (3.63)

DB371 MOUNTING CLAMP KIT

Same as DB370, but with three clamps.

Net weight — lbs/kg	11 (5.00)
Shipping weight — lbs/kg	12 (5.45)

DB5004 ADJUSTABLE SIDE MOUNT KIT to mount across the face of the tower. Use to mount all metal mast antennas 2′ (.61 m) to 8′ (2.44 m) away from side of tower measuring 2′ (.61 m) to 8′ (2.44 m) across the face. Two ten foot sections of pipe and six clamp assemblies included.

Net weight — lbs/kg	123 (55.90)
Shipping weight — lbs/kg	130 (59.1)

DB365 MOUNTING CLAMP KITS

DB365 Style Mounting Clamp Kits up to 2.75″ (69.85 mm) OD or angle members up to 1.94″ (49.28 mm) for 90° or 2.38″ (60.45 mm) for 60°. Galvanized steel, set of two.
DB365-OS for single bolt configuration.
DB365-NS for U-bolt configuration.

Net weight — lbs/kg	7 (3.18)
Shipping weight — lbs/kg	8 (3.63)

FOR OVERSIZE MOUNTING ORDER:

	Fits members up to:				
	Round	**Angle (90°)**	**Angle (60°)**	**Net Wt.**	**Shipping Wt.**
DB365-SP5	5″ (127 mm)	3.54″ (89.9 mm)	4.33″ (109.9 mm)	14 lbs. (6.36 kg)	15 lbs. (6.8 kg)
DB365-SP7	7″ (177.8 mm)	4.95″ (125.7 mm)	6.06″ (153.9 mm)	16 lbs. (7.27 kg)	16 lbs. (7.27 kg)
DB365-SP9	9″ (228.6 mm)	6.36″ (161.54 mm)	7.79″ (197.8 mm)	17 lbs. (7.73 kg)	18 lbs. (8.18 kg)

DB365W MOUNTING CLAMPS for mounting antenna to wood pole or masonry wall up to 14″ (355.6 mm) thickness (5/8″ [15.88 mm] diameter hole required). Clamp jaws fit round member up to 2¾″ (69.85 mm) OD galvanized steel. Two clamps supplied.

Net weight — lbs/kg	10 (4.54)
Shipping weight — lbs/kg	12 (5.45)

V-BOLT MOUNTING KITS

V-Bolt Mounting Clamp Kits include stainless steel V-bolts, nuts and washers, and galvanized steel back straps. Set of two.

Fits members up to:

	Round	**Angle (90°)**	**Angle (60°)**	**Net Wt.**	**Shipping Wt.**
DB11653	3″ (76.2 mm)	2.00″ (50.8 mm)	2.60″ (66.0 mm)	2 lbs. (.91 kg)	3 lbs. (1.36 kg)
DB11653-4-IN	4″ (101.6 mm)	2.80″ (71.1 mm)	3.46″ (87.8 mm)	2 lbs. (.91 kg)	3 lbs. (1.36 kg)
DB11653-5-IN	5″ (127.0 mm)	3.50″ (88.9 mm)	4.33″ (109.9 mm)	3 lbs. (1.36 kg)	4 lbs. (1.82 kg)
DB11653-6-IN	6″ (154.4 mm)	4.24″ (107.7 mm)	5.20″ (132.0 mm)	4 lbs. (1.82 kg)	5 lbs. (2.27 kg)
DB11653-7-IN	7″ (177.8 mm)	4.95″ (125.7 mm)	6.06″ (153.9 mm)	4 lbs. (1.82 kg)	5 lbs. (2.27 kg)
DB11653-8-IN	8″ (203.2 mm)	5.50″ (139.7 mm)	6.93″ (176.0 mm)	5 lbs. (2.27 kg)	6 lbs. (2.73 kg)
DB11653-9-IN	9″ (228.6 mm)	6.36″ (161.5 mm)	7.79″ (197.8 mm)	5 lbs. (2.27 kg)	6 lbs. (2.73 kg)

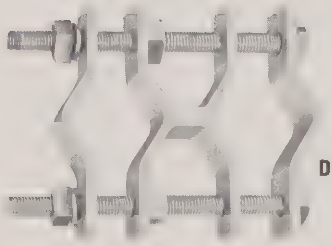
NOTE: Half sizes available.

SIDE MOUNT KITS FOR AEROGLAS AND SIDE MOUNTED ANTENNAS

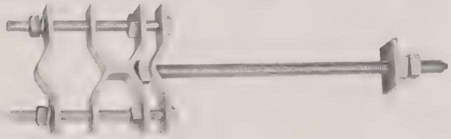
Kits for offsetting Aeroglas and MTD™ antennas from 3′ (.91 m) to 7′ (2.13 m) are now available. Galvanized steel pipe 2.375″ (60.3 mm) in diameter and DB365 style galvanized threaded bolts with hardware are supplied at the base and non-conductive upper support stabilizing arms for the top. Larger Aeroglas antennas 8′ (2.44 m) to 21′ (6.4 m) lengths require 2 of the 2.375″ (60.3 mm) galvanized pipes for bottom attachment between antenna and tower, while only one pipe is required for 8′ (2.44 m) or shorter antennas. Contact customer service for assistance in selecting the appropriate kits.

DB5080 PIPE MOUNT KIT secures DB833 and DB834 directional antennas to round tower members or pipe up to 2.75″ (69.85 mm) or angle members up to 1.94″ (49.2 mm) for 90° or 2.38″ (60.4 mm) for 60°.

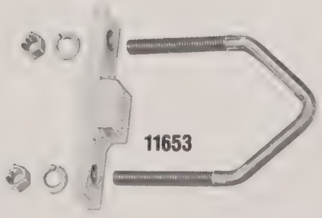
DB5080



DB365-OS



DB365W



11653

All hardware listed can be shipped UPS except Model DB5004.

APPLICATIONS

TYPICAL DESIGNS FOR MOBILE ANTENNA SYSTEMS

An antenna system includes all of the equipment used from the radio transmitter and the receiver to the tip of the antenna, and its design usually requires some compromises.

Four Primary Considerations

1. Desired RF signal coverage area,
2. Design cost efficiency,
3. Interference potential, and
4. System maintainability.

These factors are interrelated and often oppose each other when the design concept is being formed.

For example, wide area coverage goals may conflict with system cost constraints, and some grandiose coverage goals may be unobtainable at any cost.

In another example, filter equipment may be necessary to prevent disabling RF interference, even though the filters create minor insertion losses and add costs to the system.

Sometimes maximum RF coverage may be undesirable, especially where co-channel interference is a possibility.

For example, a fixed-frequency cellular station may need to saturate the cell but minimize RF beyond cell boundaries. A repeater station located on a mountain top may have a similar problem with coverage exceeding the desired area and creating co-channel interference.

Every system, of course, must be maintainable at an acceptable cost.

Antenna System Equipment

An Antenna system can be divided into three equipment groups:

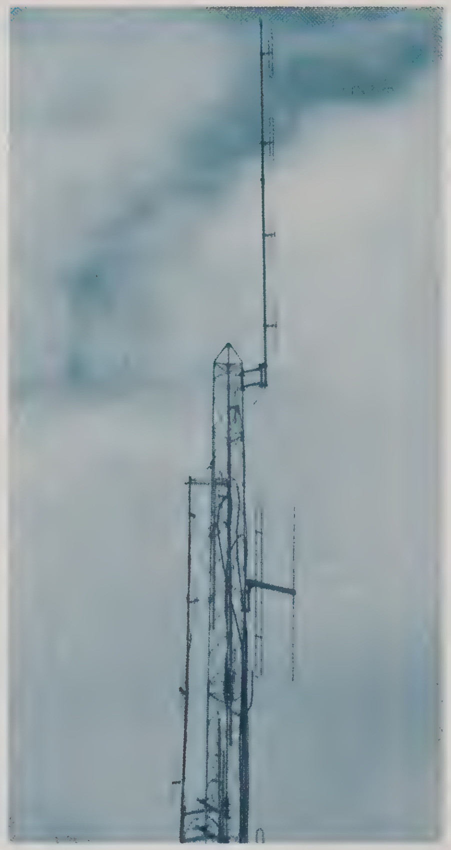
1. Combining/filtering equipment,
2. Transmission lines, coaxial cables, harnesses, jumpers, etc., and
3. Omni and directional transmitting and receiving antennas.

Combining/Filtering Equipment

This can range from a single duplexer used to combine a transmitter and a receiver to a common port all the way up to multichannel transmitter combiners and receiver multicouplers. Also included may be digital monitoring equipment and power amplifiers to boost transmitter power levels.

Some of the benefits provided by this equipment include:

1. Better use of antennas and transmission lines to reduce the number of antennas and lines required.
2. Improved isolation between transmitters and receivers to minimize or eliminate interference, and
3. Easier expansion for future frequency growth.



Transmission System

In a typical station, a coaxial cable connects the transmitters and receivers to the antenna(s). An exception would be the use of RADIAX® for tunnels, underground garages and mines, where the cable is also the radiating element.

The design of a transmission system should strike a balance among:

1. Cost of equipment,
2. Transmission efficiency, and
3. Maintenance cost and reliability.

To increase the efficiency of transmission at a given frequency, the diameter of the coaxial cable must become larger. Therefore, cable costs will rise as greater efficiency is obtained.

Also, a given diameter of coaxial cable will become less efficient as the frequency is increased.

Foam dielectric cables require less maintenance than air dielectric cables. However, air dielectric cables may be required in some installations, such as those using pressurized antennas. Air dielectric cable also has slightly better efficiency and can handle greater RF power levels than foam dielectric cables of equal diameter.

Radiating/Receiving Antennas

The selection of transmitting and receiving antennas involves two primary factors:

1. Pattern/electrical specifications, and
2. Mechanical reliability.

To help choose the best antenna pattern for a given application, read the electrical specifications and pattern diagrams given for each antenna in this catalog. Definitions for the specifications are given in the "Engineering" section at the back of the catalog.

Once the pattern and gain characteristics of the antenna have been chosen, the mechanical design should receive careful investigation, because this really separates one manufacturer's products from another's. Quality, reliability, ease of maintenance and the life of the product are of prime importance here.

Different antenna designs favor different environments.

An exposed dipole antenna is more durable than a fiberglass radome antenna in a high lightning area. The exposed dipole is also more flexible from a pattern shaping standpoint.

On the other hand, the fiberglass radome antenna has certain advantages in a corrosive or salt-air environment. It also produces less wind loading than an exposed dipole antenna.

A directional Yagi will produce less wind loading than a corner reflector directional antenna; however, the corner reflector antenna is less susceptible to de-tuning caused by ice build-up.

Consult Decibel's Engineers

Decibel Products, Inc., offers hundreds of standard and new products to give you the greatest choice of antennas, filter equipment, transmission lines and accessories. Many of these products are readily available at Decibel's Authorized Warehouse locations.

If you have any problem choosing the right equipment for your system, contact Decibel's Marketing or System's Engineers. They can answer your design and system questions, help with quotes and also design special systems for separate or co-located systems.

Other engineering services include antenna radiation pattern predictions for small or large structures and RF interference analyses.

Examples of Systems

The following pages describe Decibel antenna systems equipment for typical land mobile radio services.

APPLICATIONS

ANTENNA AND FILTER SYSTEMS, 30-1000 MHz

DECIBEL

Sections

I. Cellular Radiotelephone Antenna Systems
II. Two-Way Dispatch and IMTS Systems
III. Trunking Systems
IV. Paging Systems

Decibel Products is the complete antenna system supplier, with a wide range of compatible antennas, transmission lines, transmitter combiners, duplexers, receiver multicouplers, filters, intermodulation control devices, remote site monitors and a wide assortment of mounting hardware and accessories.

Customized products are also available. For assistance with your applications call Decibel Systems Engineering.

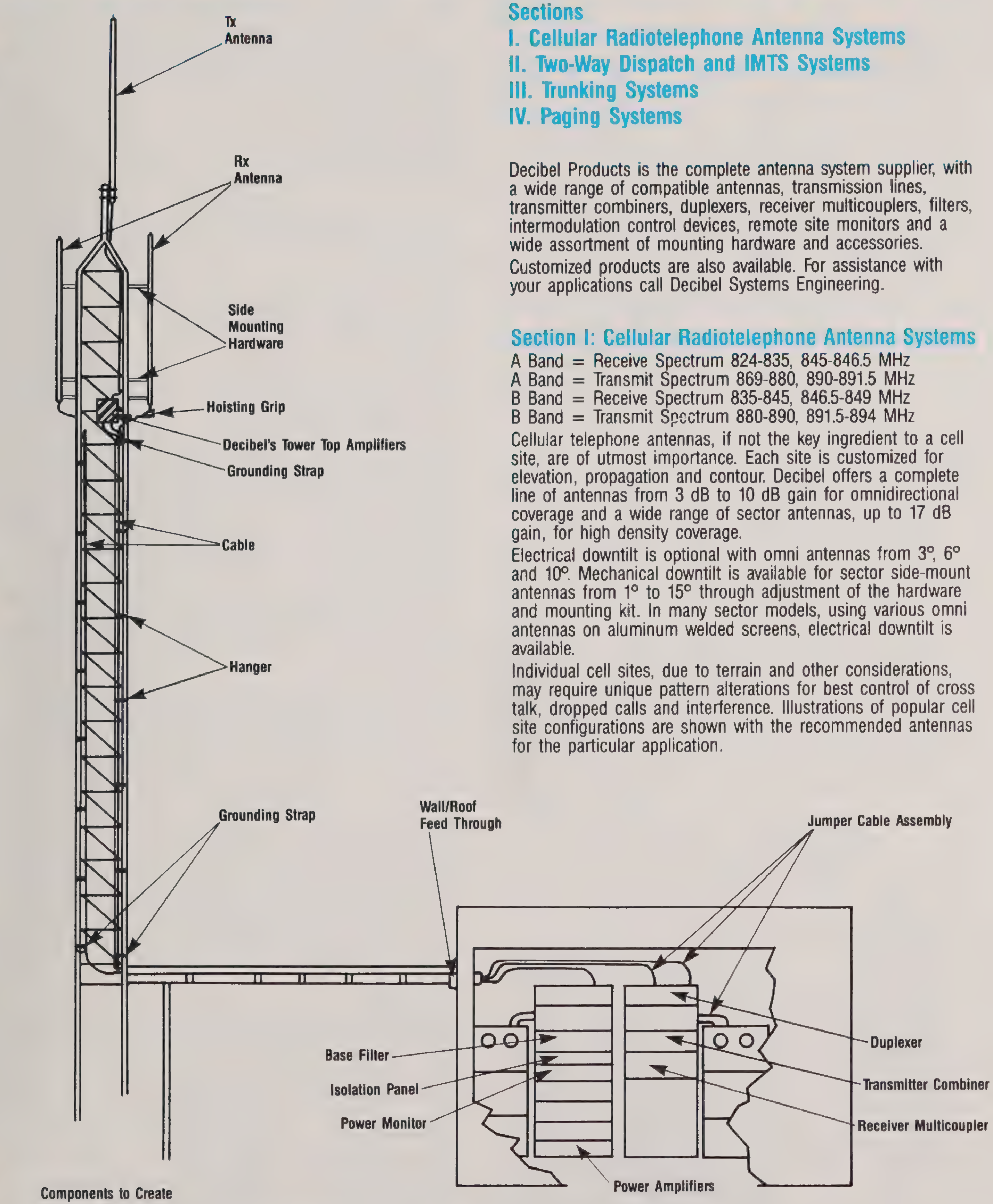
Section I: Cellular Radiotelephone Antenna Systems

A Band = Receive Spectrum 824-835, 845-846.5 MHz
A Band = Transmit Spectrum 869-880, 890-891.5 MHz
B Band = Receive Spectrum 835-845, 846.5-849 MHz
B Band = Transmit Spectrum 880-890, 891.5-894 MHz

Cellular telephone antennas, if not the key ingredient to a cell site, are of utmost importance. Each site is customized for elevation, propagation and contour. Decibel offers a complete line of antennas from 3 dB to 10 dB gain for omnidirectional coverage and a wide range of sector antennas, up to 17 dB gain, for high density coverage.

Electrical downtilt is optional with omni antennas from 3°, 6° and 10°. Mechanical downtilt is available for sector side-mount antennas from 1° to 15° through adjustment of the hardware and mounting kit. In many sector models, using various omni antennas on aluminum welded screens, electrical downtilt is available.

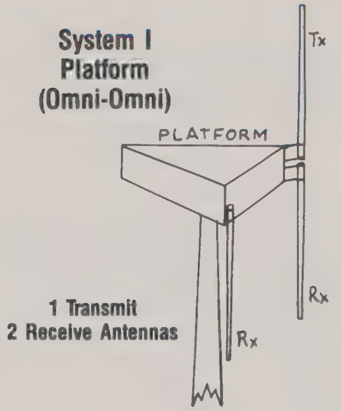
Individual cell sites, due to terrain and other considerations, may require unique pattern alterations for best control of cross talk, dropped calls and interference. Illustrations of popular cell site configurations are shown with the recommended antennas for the particular application.

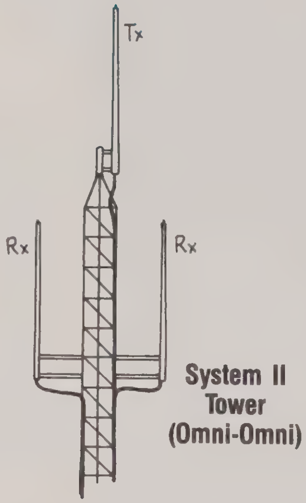

Tx Antenna
Rx Antenna
Side Mounting Hardware
Hoisting Grip
Decibel's Tower Top Amplifiers
Grounding Strap
Cable
Hanger
Grounding Strap
Wall/Roof Feed Through
Jumper Cable Assembly
Duplexer
Transmitter Combiner
Receiver Multicoupler
Base Filter
Isolation Panel
Power Monitor
Power Amplifiers

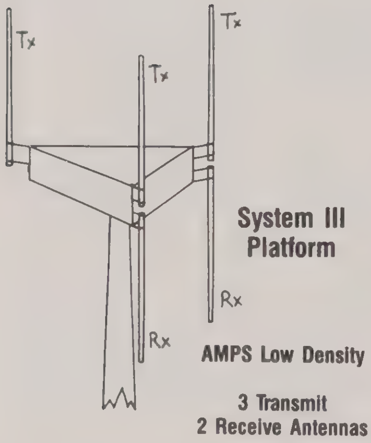
Components to Create Complete Systems

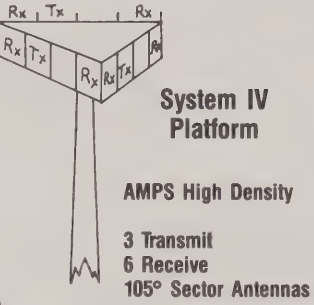
- Base Station Antennas
- Cables
- Duplexers
- Transmitter Combiners
- Receiver Multicouplers
- Base Station Filters
- Isolation Panels
- Power Monitors
- Power Amplifiers
- Tower Top Amplifiers
- Hardware and Accessories

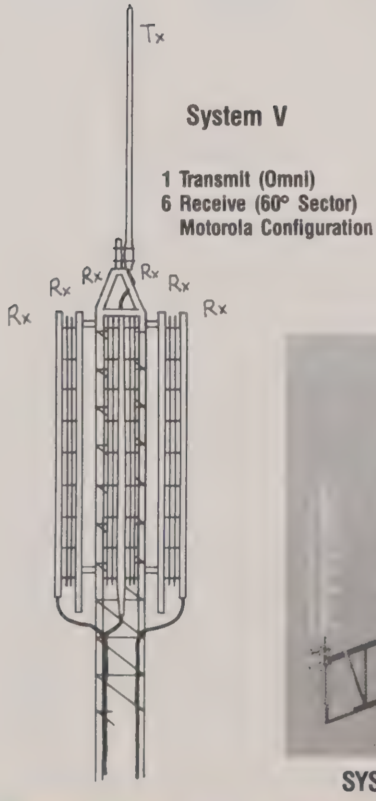
APPLICATIONS CONTINUED


System I
Platform
(Omni-Omni)
PLATFORM
Tx
Rx
Rx
1 Transmit
2 Receive Antennas


Tx
Rx
Rx
System II
Tower
(Omni-Omni)


Tx
Tx
Tx
System III
Platform
Rx
Rx
AMPS Low Density
3 Transmit
2 Receive Antennas


Rx
Tx
Rx
Rx
Tx
Rx
Rx
Tx
Rx
System IV
Platform
AMPS High Density
3 Transmit
6 Receive
105° Sector Antennas


Tx
System V
1 Transmit (Omni)
6 Receive (60° Sector)
Motorola Configuration
Rx
Rx
Rx
Rx
Rx
Rx

SYSTEM VI: Sector/Sector

System I: Platform, Omni-Omni, with 1 Transmit and 2 Receive Antennas

A choice of Decibel antennas is available from two groups: Aeroglas™ and Minimum-Tip-Deflection Full-Wave Dipole.

Aeroglas, Horizon Blue™

DB553, 3.5 dB Gain
DB557, 7.5 dB Gain
DB559, 9 dB Gain. With optional electrical downtilt of 3°, 6°, or 10°, gain is reduced to 8 dB.
DB560, 10 dB Gain. With optional electrical downtilt of 3°, 6°, or 10°, gain is reduced to 9 dB.

NOTE: Receive antennas available with uptilt for inverted mounting.

Minimum-Tip-Deflection (MTD™) Full-Wave Dipole (FWD™), Horizon Blue

DB803XI, 3 dB gain. DB806XI, 6 dB gain. DB809XI, 9 dB gain.

NOTE: These antennas have an extension pipe for platform or pipe-to-pipe mounting. They can be inverted. Order DB860 for 10 dB gain and heavy-duty MTD fiberglass radome. Downtilt is not available in these models.

System II: Tower, Omni-Omni, with 1 transmit and 2 receive antennas

Use the same antennas as for System I. However, for the 2 receive antennas, when mounted upright as shown in the illustration and downtilt is required, order downtilt models.

System III: Amps, Low Density, Platform

Use the same antennas as recommended for Systems I and II. Again, for downtilt, the receive antennas must be ordered with uptilt so that, when mounted in the inverted position, the beam is downtilted.

System IV: Amps High Density 3 Cell Configuration with 3 Transmit and 6 Receive 105° Sector Antennas

For this type of system, the DB833 9 dB gain antenna and the DB834 10.5 dB gain antennas are very popular. Both antennas are available in separate transmit or receive frequency range models or in single full frequency range models.

System V: Motorola Omni/Sector Configuration, 1 Transmit Omni and 6 60° Sector High Gain Receive Antennas

The DB560 or the DB860 10 dB gain antennas are recommended for the transmit antenna. Optional 3°, 6° or 10° electrical downtilt is available on DB560 only. The DB567 17 dB gain 60° sector antennas are used for receive.

A 1° to 15° downtilt side mounting kit can be ordered with the DB567 receive antenna to mechanically adjust the downtilt to match the degree of electrical downtilt of the transmit antenna.

System VI: Sector/Sector, 6 Each 60° Sector Transmit and 6 each 60° Sector Receive Antennas

Tower or platform configurations can use the DB567 17 dB gain 60° sector antennas. Downtilt models are not available with this type system.

Other Systems

Many of Decibel's antennas have been discussed for cellular telephone application. The following models have been used in configurations not illustrated.

Model	Type	Gain	Pattern	Front-to-Back Ratio
DB557Y	Dual Sector	17 dB	60°/60°	25 dB
DB564	Sector	14 dB	120°	26 dB
DB563	Sector	13 dB	135°	17 dB
DB562	Sector	12 dB	150°	13 dB
DB561	Sector	11 dB	170°	11 dB
DB567R90	Sector	10 dB	190°	25 dB
DB809XHI	Omni	9 dB	806-910 MHz	
DB498	Directional Yagi	9 dB		18 dB
DB499	Directional Yagi	10 dB		20 dB

APPLICATIONS CONTINUED

DECIBEL

Section I: Cellular (continued)

Transmission Lines and Jumper Cable Assemblies

Due to high attenuation (loss) values experienced at 800-1000 MHz, Andrew Foam Dielectric (LDF®) HELIAX® cables, 7/8″ (22.23 mm), 1-1/4″ (31.75 mm) or 1-5/8″ (41.28 mm) diameters are most commonly used for transmission lines, depending on length and other considerations. The size and type of coaxial cable used may also include air dielectric designs for pressurization. The quality and performance of Andrew coaxial cable and connectors has been and remains outstanding among manufacturers.

For low loss integrity of the entire antenna system Andrew products are recommended for jumper and inter-connect cable accessories as well.

Hardware

All installation accessories including grounding straps, cable hanging hardware, etc. can be furnished by Decibel. Many are Andrew products.

Filters/Duplexers

Cellular cites can be RF congested. New rural cellular telephone, new 900 MHz trunked systems and 928-932 MHz paging make it necessary to have high quality, temperature-stable, peak voltage power handling products to withstand the demands of these systems. Decibel's long history of engineering products to meet the most stringent system demands have been of utmost importance when developing filters for both transmit and receive applications for the cellular band.

The DB4200 aperture coupled filter has .5 dB loss across a 20 MHz band of frequencies (both A and B bands). At plus or minus 30 MHz from the 20 MHz band edges, signals are attenuated by 75 dB or greater. The DB4193 10 MHz preselector filter for the receive band (A Band or B Band) has 2.5 dB loss at the band edges. However, attenuation out of band at plus or minus 10 MHz is −42 dB and at plus or minus 20 MHz is −85 dB.

The cellular duplexer recommended is a combination of the transmit and receive filters to construct models DB4187A (for A range) or DB4187B (for B range). Specify frequency ranges when ordering. For specifications for additional cellular filters or duplexers, by model numbers, see the appropriate catalog pages.

Transmitter Combiners

The DB8080-16 ceramic dielectrically loaded cavity — ferrite transmitter combiner utilizes minimum space. Channels, with dual junction isolators, occupy 21″ (533.4 mm) of space in a 19″ (482.6 mm) rack. The DB8081-16 is the same combiner except it has single junction isolators. The ceramic-loaded band pass cavities are 75% smaller than a comparable air-dielectric 3/4-wave cavity, while retaining the same high Q characteristics. The combiners are expandable in 4-channel steps up to 16 channels.

The DB8060-16 channel combiner can be used for cellular telephone systems. Its 150 watt power handling capability and minimum channel-to-channel separation requirement of 250 KHz or greater, makes it ideal for the 50 watt, 600 KHz channel-to-channel separations in cellular applications. The DB8060 combiner is expandable up to a maximum of 20 channels.

Tower Top Diversity Preamplifiers

Decibel offers DB8900 series diversity tower top preamps for cellular telephone site receive systems. Two separate bias-tee and low noise, high gain bipolar preamps are mounted along with DB4192 pass band filters in the same NEMA enclosure for tower top installation. Separate Andrew HELIAX transmission lines feed DC voltage via the bias-tees and regulated power sources (or power supplies) at the bottom end.

Receiver Multicoupler

The DB8500 series of receiver multicouplers has high gain, low noise, bipolar amplifiers and power supplies that are modular plug-in for quick exchange. The standard is 115 VAC/15 VDC (12-15 VDC optional). The units are expandable in 4 to 16 channels (expandable in 4-way splits) or 8 to 32 channels (expandable in 8-way splits). The external 19″ (482.6 mm) rackmount preselector filter for the system is the DB4193A (825-835 MHz) or the DB4193B (835-845 MHz).

Section II: IMTS (Improved Mobile Telephone System) and Two-Way Dispatch Systems

Cellular telephone sites are low power (except rural systems), small geographic area coverage and "hand-off" mobile units between coverage areas. IMTS and two-way radio dispatch systems are higher power, have larger geographic area coverage and do not hand-off mobiles. These stations most commonly occupy higher elevations or are on tall towers and other structures to obtain maximum effective radiated power (ERP).

IMTS is a mobile telephone system that produces revenue on a per call basis.

A two-way dispatch system provides radio service and creates savings or cost reduction by more effective use of vehicles for the businesses or government entities it serves.

These systems require the most reliable antennas, coaxial cable and accessories and associated passive (and now active) products available. Decibel's four decades of product development and manufacture provide all the components required for quality IMTS and dispatch antenna systems.

Antennas

IMT Systems require broadband antennas for the duplexing transmit and receive frequencies to a single antenna. In some cases, where frequency separations will allow, duplexers permit combining multiple transmitters to a transmit antenna, and associated receivers to a receive antenna. Most systems require omnidirectional coverage, but others may require controlled pattern coverage. For these applications Decibel System Engineering personnel can assist in selecting an antenna that best meets pattern, coverage and mounting requirements.

Transmission Line

Depending on the frequency band, 1/2″ (12.7 mm) or 7/8″ (22.23 mm) HELIAX transmission lines, with jumper assemblies, are common. When coaxial cable runs are greater than 400′ (122 m), losses of the 1/2″ (12.7 mm) diameter may be in excess of the ERP requirement; then, 7/8″ (22.23 mm) or possibly 1-1/4″ (31.75 mm) may be a better choice. All hanging kits and accessories are available for cables selected.

Duplexers and Transmitter Combiners

An ideal duplexer for the VHF band is the DB4058W 4-cavity, bandpass-band reject design on a 5-1/4″ (133.35 mm) × 19″ (482.6 mm) rack mounting panel. For the UHF band, 406-512 MHz, the DB4076W bandpass-band reject duplexer, also on a 5-1/4″ (133.35 mm) × 19″ (482.6 mm) rack mount panel, is recommended. For combining two or more transmit channels, the DB4350 VHF high Q low-loss combiner is ideal. For extremely close frequencies, the DB4352 Hybrid Ferrite Combiner is required for VHF frequency bands. For UHF, the DB4379 high Q low loss combiner is suggested. For extremely close frequencies, the DB4382 Hybrid Ferrite Combiner is required.

LDF and HELIAX are registered trademarks of Andrew Corp.
SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.

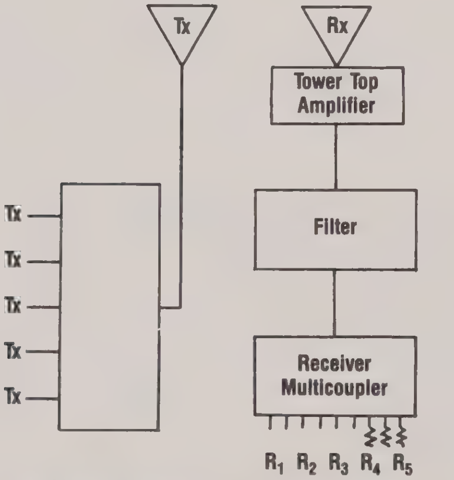
Receiver Multicouplers

Multicouplers are used to combine receivers on a single antenna. Each receive signal can be protected and amplified. For VHF, the DB8204-101W model is expandable to 16 channels. For UHF, the DB8304-101W is expandable to 16 channels. Four-way splitters and interconnect cables, in expansion kits, may be ordered for either frequency band when expansion becomes necessary.

Internally mounted VHF and UHF passband filters are available. However, with most amplifier-receiver systems, where transmitters and receivers are closely spaced (even on separate antennas), transmitter noise and receiver desense studies should be made.

Externally mounted filters may be required. For the UHF (406-512 MHz) bands the DB4176W SHAPE FACTORED FILTER® has a 4 MHz passband while the DB4177W SHAPE FACTORED FILTER has a 2 MHz passband. Both units have very high rejection levels to out-of-band signals that are 1 to 2 MHz either side of the tuned passband "windows." For receive systems requiring special filtering and tower top amplifiers, Decibel Systems Engineering personnel can assist you.

Two Antenna System



Five Channel Combiner
Expandable to
20 Channels

Eight Channels
Expandable to 32 Channels
800 MHz Trunked

Section IIIA: 800 MHz Trunked Systems

In land mobile communications trunked systems are one of the fastest growing radio services today. Due to the 800 MHz frequency spectrum, some antenna equipment component sizes are reduced, which consequently can reduce space consumption without sacrificing system performance. Major components and accessories for trunk systems are summarized below.

Antennas

Interference problems are more likely in an 800 MHz trunked system when a single antenna is used in a duplexed system. And, at some sites, there is no option but to duplex the system. When it is possible to use separate transmit and receive antennas, it is strongly recommended.

Decibel offers a wide selection of 800 MHz antennas. Maximum gain in omni configurations is 10 dB. Some of these antennas can be ordered with 3°, 6° or 10° downtilt. Typical applications for downtilt antennas are mountain top installations, tall buildings or towers that are 700 feet (213 m) or higher in elevation. High gain antennas with narrow vertical beamwidths may overshoot desired coverage areas. In systems where long range coverage is not required, lower gain antennas with expanded vertical beamwidths are recommended. The most popular trunked systems antennas are:

Broadband, up to 100 MHz Bandwidth

DB809-H, 9 dB gain, omnidirectional
DB806-H, 6 dB gain, omnidirectional

Two Antenna Systems (Recommended)

DB560, 10 dB gain, omnidirectional
DB559T3 or T6, 8 dB gain, 3° or 6° downtilt
DB560T3 or T6, 9 dB gain, 3° or 6° downtilt

Transmission Lines

Due to the high attennuation (loss) experienced at 800 MHz, 1-1/4″ (31.75 mm) or 1-5/8″ (41.28 mm) HELIAX® cable is most commonly used for antenna feedline. Exceptions can be made with the receive antenna feedline when a DB8900 series tower top amplifier is used. Then 7/8″ (22.23 mm) diameter HELIAX® is an acceptable replacement. The end result is a better trunked receive system at essentially the same system costs.

Transmitter Combiners

The DB4458 Cube™ for 1 MHz Tx-Tx spacing and the DB4458-2 Cube for 500 KHz Tx-Tx spacing are the predominantly accepted transmitter combiners for 800 MHz wider Tx spacing trunked systems.

The DB8060 series trunking combiner was developed with reduced space consumption, expandability and stability as major objectives. Six channels occupy 18.375″ (466.7 mm) of vertical rack space. The combiner can be expanded one channel or more at a time up to 20 channels. Temperature compensating devices for stability are built into all passive components to help insure trouble free service over long term, heavy-duty trunked system usage. Refer to DB8060 series combiners in this catalog for detailed specifications.

Tower Top Receiver Amplifiers

Trunked systems that have DB8980 tower top receiver amplifiers markedly out perform systems with bottom-end amplified receiver multicouplers. The improvement results in the sensitivity of the base station receivers and the "talk back" range for low power hand held radios in the 806-821 MHz, range. Strong consideration should be given for the use of tower top amplifiers in new systems planning or in improvement of existing systems.

Filters

Decibel's DB4192 interdigital filter is recommended for the 800 MHz trunked receive system preselector. Passband characteristic is 16 MHz wide from 806 through 821 MHz allowing conventional dispatch and the trunking bands to be coupled into the same antenna system. For special filters, call Decibel System Engineering for assistance.

Receiver Multicouplers

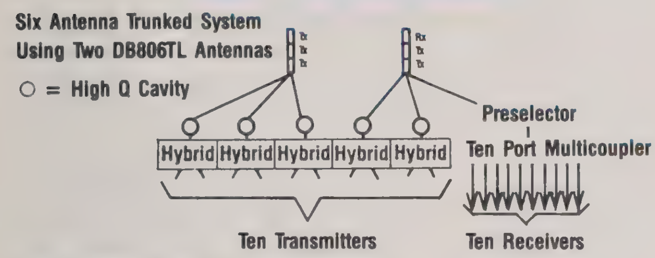
Decibel offers a range of options for the DB8500 series receiver multicoupler in the 806-960 MHz range. The amplifier is a bipolar, high gain, low noise plug-in model. All models are expandable, one in 4-way splits up to 16 channels and another in 8-way splits up to 32 channels. Power supplies are optional, such as 115 VAC-15 VDC or 11-15 VDC regulated.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.
HELIAX is a registered trademark of Andrew Corporation.

Section IIIB: 900 MHz Trunked Systems

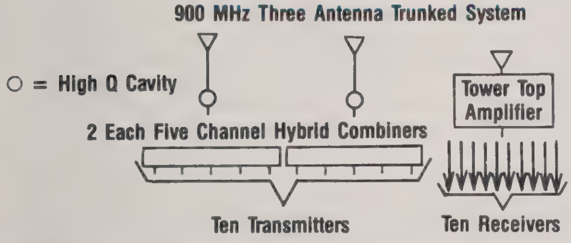
900 MHz trunked systems, with narrow channel-to-channel frequency separations (12.5 and 25 KHz), present challenges where various systems can and should be considered. At this time, the options Decibel recommends are Antenna Systems I through IV. These systems vary in total antenna, types of antenna and combining and filtering requirements. System losses will also vary between options. Systems I, II, III, and IV are summarized in this section.

System I (Two Way Hybrids Tx)


Six Antenna Trunked System
Using Two DB806TL Antennas
○ = High Q Cavity
Tx
Tx
Tx
Rx
Tx
Tx
Preselector
Hybrid
Hybrid
Hybrid
Hybrid
Hybrid
Ten Port Multicoupler
Ten Transmitters
Ten Receivers

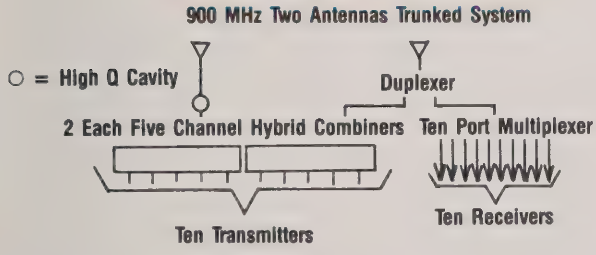
Eight Channel Hybrid with Dual Isolators	−4.0 dB
Cavity Loss	−0.5 dB
1-5/8″ (41.28 mm) HELIAX® Line 100′ (30.5 m)	−0.78 dB
Total Losses	5.28 dB

System II (Five Way Hybrids Tx)


900 MHz Three Antenna Trunked System
○ = High Q Cavity
Tower Top Amplifier
2 Each Five Channel Hybrid Combiners
Ten Transmitters
Ten Receivers

Eight Channel Hybrid with Dual Isolators −8.0 dB Loss

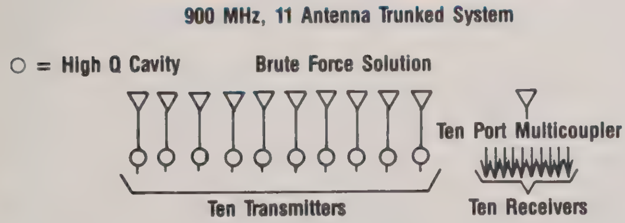
System III (Five Way and Duplexer)


900 MHz Two Antennas Trunked System
○ = High Q Cavity
Duplexer
2 Each Five Channel Hybrid Combiners
Ten Port Multiplexer
Ten Transmitters
Ten Receivers

Losses

Five Channel Hybrid with Dual Isolators	−8.0 dB
Duplexer Tx/Rx	−0.8 dB
Bridging Loss — Interconnect Cable	−0.15 dB
100′ (30.5 m) 1-5/8″ (41.28 mm) Tx Line	−0.78 dB
Total Losses	9.37 dB

Antennas for All Tx Rx System-Combined


900 MHz, 11 Antenna Trunked System
○ = High Q Cavity
Brute Force Solution
Ten Port Multicoupler
Ten Transmitters
Ten Receivers

System I: Minimum Loss Per Channel, Two Triple Antennas

Decibel has developed the DB806TL antenna. It is three 6 dB gain antennas in one heavy-duty, Minimum-Tip-Deflection (MTD™), Horizon Blue™ fiberglass radome with outputs at the base for each antenna. Install two DB806TL arrays for a total of six antennas. (See System I schematic.)

System II: Three Single Antennas

This three-antenna system uses the DB560 or DB860 10 dB gain antenna. The DB560 can be ordered with 3°, 6°, or 10° electrical downtilt. One dB of gain is lost when downtilt is provided.

System III: Two Single Antennas

The transmit antenna can be either a DB560 or the DB860. The receive antenna should be the DB809-K broadband FWD™ (Full Wave Dipole) antenna to cover the transmit and receive frequencies.

Transmitter Combiners: System I

System I requires 2-channel hybrid combiners (DB4392) with dual junction isolators and harmonic filters for each channel. A total of five DB4392 combiners are required for 10 transmitters.

System II and III

Both systems require two 5-channel hybrid combiners DB4391-5 with dual junction isolators and harmonic filters for each channel.

System IV

This system is not combined; however, each transmit channel requires DB4641-2A dual junction isolators and DB4045 high Q bandpass filters.

Filters in Systems I, II, III, and IV

The DB4045 high Q bandpass filter is used after the hybrid combiners to pass the desired frequencies and attenuate the receive band 39 MHz away. The antenna separation plus the filter selectivity is sufficient to keep the transmistters from desensitizing.

System IV requires dual junction isolators with DB4045 cavity filters for each of the 10 transmitters.

Tower Top Preamps

The DB8981P tower top preamplifiers will greatly enhance the talkback capability of small, low power transmitters. (See additional information in this catalog.) The preselector recommended for the tower top amplifier is the DB4196, which passes the 5 MHz receive band and attenuates the transmit band by 65 dB. The antenna separations, plus the selectivity of the DB4196 filter, are sufficient to protect the receivers from transmitter noise. Standard power supply is 115 VAC - 15 VDC.

Receiver Multicouplers

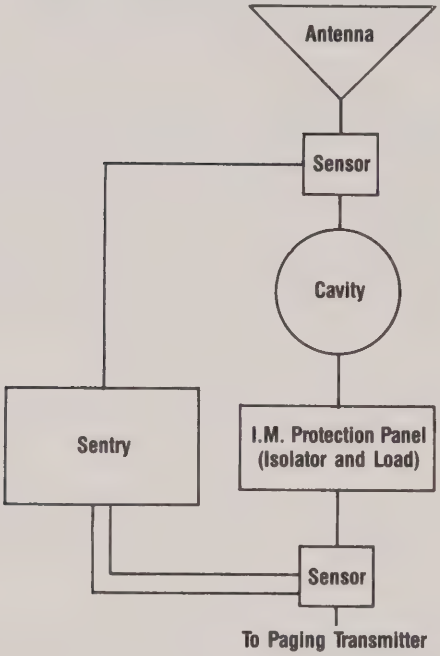
The DB8500 series of receiver multicouplers can be ordered with 8-way splitters, expandable to 32 channels in 8-way steps or 4-way splitters, expandable to 16 channels in 4-way steps. The amplifier is a high gain, low noise bipolar plug-in module with a 115 VAC-15 VDC power supply. Decibel recommends the DB4196 external 19″ (482.6 mm) rackmount filter for the receive system.

Duplexer: System III

For this system, five transmit channels are duplexed with all the receive channels to a single antenna. The DB4090S-4 duplexer passes 125 KHz transmit and receive bands while attenuating transmit and receive channels by 100 dB or more over the same 125 KHz bandwidths.

Section IV: Paging System

A typical paging system, generally speaking, has a narrow frequency band antenna for single frequency application, dedicated to transmissions only. Systems vary considerably depending on frequency band, power levels and co-existence with other systems. Major components and accessories of these systems and their needs are summarized below.



Antennas

When choosing the antenna for a paging system, the following parameters must be considered:

(A) Maximum power handling,
(B) Area of coverage, and
(C) Gain of antenna.

In local areas, unity-to-minimum gain antennas perform very well. They are generally less expensive than high gain broadband antennas.

Some popular paging antennas are:

Omnidirectional 30-78 MHz

DB201 Ground Plane
DB205 Coaxial

450-512 MHz, Omni or Elliptical

DB201 Ground Plane
DB205 Coaxial
DB404 External Dipoles
DB408 External Dipoles
DB411 External Dipoles
DB413 External Dipoles
DB420 External Dipoles

Directional

DB212 Side Mount
DB225 Field Retunable
DB230 Field Retunable

928-932 MHz, Omnidirectional

DB803-K 3 dB gain FWD™
DB806-K 6 dB gain FWD
DB809-K 9 dB gain FWD
DB559-G 9 dB gain Aeroglas™
DB557-G 7.5 dB gain Aeroglas

Directional

DB561-G 11 dB gain 170°
DB562-G 12 dB gain 150°
DB563-G 13 dB gain 135°
DB564-G 14 dB gain 120°

Transmission Lines

Low loss Andrew HELIAX® cables of 1/2″ (12.7 mm), 7/8″ (22.23 mm) or 1-1/4″ (31.75 mm) diameter are typical selections for paging systems. 1/2″ (12.7 mm) HELIAX for short runs and 7/8″ (22.23 mm) or 1-1/4″ (31.75 mm) HELIAX cable for longer runs. Larger diameter HELIAX cables, up to 1-5/8″ (41.28 mm) diameter, are used increasingly for longer runs at 900 MHz.

Cavities/Filters/Isolation Panels

Paging systems must co-exist with other systems at the same site or in the same vicinity. Depending on frequency separations, power levels and the proximity of systems, interference problems can be severe enough to require selective filtering, isolation panels or a combination of both.

Cavity Filters

30-50 MHz, DB4042
66-88 MHz, DB4011
148-174 MHz, DB4001
450-512 MHz, DB4021
450-512 MHz, DB4076

900 MHz Filter/Isolator

928-932 MHz,
DB8060B

Intermodulation Protection Panels

148-174 MHz, DB4700 Series
450-512 MHz, DB4700 Series
928-932 MHz, DB4700 Series

900 MHz High Power Circulator/Isolator

928-932 MHz, DB4345HS-C
Circulator, maximum power input 300 watts
928-932 MHz, DB4345HSL-C
Isolator, with 100 watt load. Maximum power input 300 watts.

Transmitters/Combiners

In some instances, combining of two pagers may be necessary. Depending on power levels and transmitter frequency separations, combiners can be recommended that will have less loss than ferrite hybrid types of combiners. Frequency separations must be sufficiently far apart. For assistance in selecting the best combiner for your application, call Decibel Systems Engineering.

Monitoring Equipment

For more dependable personal communications systems, it is absolutely necessary to monitor, protect and control remote paging transmitter sites. Competitive advantage can be gained by bringing site measurements and control to your fingertips. You can identify degradation or malfunctions — BEFORE YOUR CUSTOMERS DO — with Decibel's antenna system monitors. The DB8843 and DB8860 measure and report transmitter power (forward and reflected), transmitter VSWR, combiner and filter losses and environmental conditions (intrusion, fire, flood, etc.). For complete features and broad expandable system design, refer to the product pages in this catalog.

ENGINEERING MOBILE RADIO ANTENNA SYSTEMS, 30 to 1000 MHz

DECIBEL

The information presented here primarily concerns station antennas and filter products. Considerably more can be done at the station than with mobile antennas to influence system performance. In many systems there is only one station antenna serving a number of mobile units so good base station performance benefits all units in the system. Cellular systems, having many sites, makes both site and mobile installations critical to overall system performances.

Station antennas, unlike mobile antennas, cannot be easily inspected and replaced so that when system performance fails expectations, the station antenna often is suspected. A section has been devoted to station antenna problems and trouble shooting as well as to avoiding problems during installation. The mobile antenna portion of the catalog also deals with selection and installation of mobile antennas particularly in the 800/900 MHz frequency range.

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Definitions

BEAM TILT. Generally refers to the angular tilt of the main lobe in the elevation pattern above or below 0 degrees elevation. It must be referred to the free space pattern unless the actual vertical pattern approaches free space conditions (free from the ground reflection effects).

BEAM WIDTH. The angular width measured in degrees between the half power points (3 dB down from maximum) of the major lobe in either the elevation or azimuth radiation pattern.

DECIBEL (dB). A convenient unit for expressing the ratio of the power gain or loss in an antenna or transmission line, or the relative intensity in the radiation pattern. The 0 dB level reference should be specified. dB gain = 10 $\log_{10} P_2$, where P_2 is the power ratio. Log_{10} is the common logarithm. Decibels are convenient to use in figuring system gain because they can be added and subtracted to obtain net gain.

DIRECTIVITY. The ratio of the maximum radiation intensity to the average radiation intensity. If the antenna and its feed system are lossless, the directivity is the same as the gain.

FREE SPACE. In space clear of the earth or other bodies so that radiation is propagated on a direct path only. Antenna patterns generally are shown as free space patterns.

WAVELENGTH (λ). The ratio of the velocity of the wave to the frequency of the current causing the wave.

$$\lambda \text{ (feet)} = \frac{984\ (300\text{ m})}{f\text{ (MHz)}} \text{ in free space.}$$

Wavelength at higher frequencies is more conveniently expressed in inches:

$$\lambda \text{ (inches)} = \frac{11808\ (300\text{ m})}{f\text{ (MHz)}}$$

GAIN. Often referred to as power gain, it is the ratio of the maximum radiation in a given direction to that of a reference antenna in the same direction for equal power input. Gain differs from directivity in that it takes into consideration the losses in the antenna as well as a specified direction, angle, or plane of the radiation pattern. In two-way radio, gain generally is referred to a half-wave dipole in free space at 0 degrees elevation in the elevation pattern.

ISOTROPIC (dBi). Generally refers to a theoretical antenna having a spherical radiation pattern with equal gain in all directions. Used as a standard or reference level for measurement of gain — especially at microwave frequencies. When used as a gain reference, the isotropic antenna has a power gain of 0 dBi.

"LOSSLESS" HALF-WAVE DIPOLE (dBd). Another theoretical antenna, it has a directivity and power gain of 2.15 dB over an isotropic. When used as a gain reference, the "lossless" half-wave dipole has a power gain of 0 dBd.

HALF-WAVE DIPOLE (dB). A half wavelength antenna, center fed so as to have equal current distribution in both halves. Mounted vertically, it has a doughnut shaped pattern, circular in the horizontal plane. It is an antenna that can be constructed. It has some inherent losses. When used as a gain reference, the half-wave dipole has a power gain of 0 dB.

POLARIZATION. The orientation of the electric field vector (E) for maximum radiation. If the long dimension of the radiator is vertical, generally the polarization is vertical; if horizontal, the polarization likewise horizontal. Most two-way radio antennas are vertically polarized.

POWER RATING. The input power to the antenna terminals that the antenna can safely handle and deliver its rated performance. Generally, it is limited to the power handling capacity of the feed line.

RADIATION PATTERN. A graphical representation of power radiation of an antenna usually shown for the two principal planes, azimuth and elevation. The radiation pattern of an antenna is usually measured in the far field which is generally considered to be beyond the distance of $\frac{2D^2}{\lambda}$ where D is the radiating length of the antenna and λ is the wavelength.

VSWR. Voltage standing wave ratio is the ratio of the maximum to the minimum values of voltage (or current) in the standing wave pattern at the antenna terminals. A standing wave is produced when the antenna (load) impedance differs from the characteristic impedance of the transmission line.

Concepts of the Antenna System

The antenna system of a two-way radio station is comprised of the antenna radiator itself, the transmission line between the antenna and equipment, and other devices such as cavities or matching networks which may be inserted between the antenna and station equipment to provide greater utilization of the antenna.

In the two-way mobile radio services the antenna does more to determine effectiveness of operation than perhaps in any other service. First, it functions on transmit to convert the power in the transmission line into radiation, the pattern of which can be shaped and directed to suit the particular coverge requirements. Secondly, it functions on the receive cycle to collect the weak signal energy from space surrounding it (with the same effectiveness as on transmit) and directs it to the receiver input. In a well designed antenna, the efficiency of conversion at the antenna proper from delivered energy to radiated energy approaches 100% with a negligible loss in the form of heat and stray radiation.

Adequate coverage is a constant problem in two-way operations. There is always a need for greater or more signal strength. Transmitter power is limited by FCC Rules and receiver sensitivity approaches the state of the art. Only the antenna can be used then to expand coverage or to increase signal strength. Naturally, this places emphasis on antenna designs that can best meet system coverage requirements, and an intelligent application to the specific coverage problem at hand.

Let us look at the characteristics which must be considered in the design and application of antennas to meet various requirements in two-way radio operations.

Electrical Characteristics

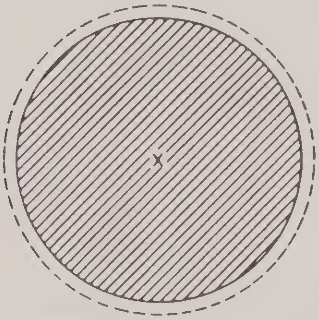
Antenna Radiation Pattern vs. Coverage (Azimuth Plane)

Only the radiation pattern in the principal azimuth plane (0° elevation) will be considered since there are but limited applications requiring knowledge of either the elevation pattern or of the azimuth pattern at other angles of elevation.

The system planner really needs to know the range coverage pattern of a particular antenna in order to apply it to a given area. In lieu of the range pattern, the radiation pattern should be shown in decibels (dB) with 0 dB referenced to a half-wave dipole. Plotted on polar graph paper with the center at −40 dB, the shape of such radiation patterns will approach the shape of their range patterns for most antennas used in two-way radio systems.

Figure 1a

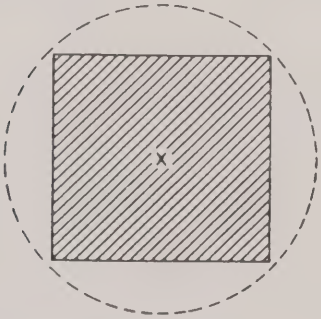
Omnidirectional coverage pattern for circular area with station located in center.



Area to be covered ▨ X = Station Location

Figure 1b

Omnidirectional coverage pattern for square area with station located in center.



Antenna Coverage (Range) Pattern

Omnidirectional coverage can be applied to those areas which are basically circular or square in shape and wherein the base station is located essentially in the center. For such coverage areas, an omnidirectional antenna pattern is the logical choice. Since very few areas are true circles, the antenna pattern itself may not have to be circular to stay within 1 dB. It should, however, be a circular shape and, where the variations exceed 1 dB, the pattern should be shown (a variation of 2 dB will produce a range variation of approximately 10%).

Where omnidirectional antennas are side-mounted on towers, consideration must be given to the distortion in pattern shape caused by the tower. (See side-mounted antenna discussion.) Generally, it is advisable to use antenna arrays designed for side-mounting to minimize such pattern distortion.

To expand the omnidirectional coverage area, it is necessary to increase antenna gain while maintaining an omnidirectional pattern. This can be done through vertical stacking of omnidirectional antennas or radiator elements to form a vertical array. The limitation on gain is determined largely by practical considerations of size and cost. This will be covered under Antenna Gain.

Shaped coverage is required for many areas such as peninsulas, rights-of-way, coast lines and others. Examples of these are:

(a) Circular or square area with station off-center can be covered with an off-center (eccentric) radiation pattern.

(b) Rectangular area with station in center can be covered with a bidirectional radiation pattern. The sharp nulls of the figure 8 pattern can be filled by side-mounting on a tower or pipe so as to give essentially a rectangular coverage pattern. Where the tower cross section is large compared to the wavelength, directional antennas can be used on opposite sides.

(c) Rectangular area with station off-center generally can be covered with a directional antenna. To increase range while maintaining pattern shape, additional directive antennas can be vertically stacked in line.

(d) Boundary areas with the station near the boundary, such as a station along a coast line, generally adapt to an off-center radiation pattern or a broad (180°) directional pattern.

(e) Irregular shaped areas can be covered by a combination of antennas. Sometimes it is necessary to cover one or more points beyond an otherwise circular area and here a directional pattern antenna can be combined with an omnidirectional pattern antenna to meet the problem.

Polarization

Most two-way antennas use vertical polarization because vertical is more practical for the mobile antenna. It is possible to design horizontally polarized mobile antennas with circular patterns and with the gain of vertical antennas, but the shape and size often are impractical from a user's standpoint. Horizontally polarized station antennas often are used in point-to-point applications for control of a relay base station.

Figure 2a

Off-center coverage pattern for square area with station located off-center.

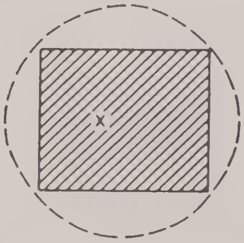


Figure 2b

Bidirectional coverage pattern for rectangular area with station located in center.

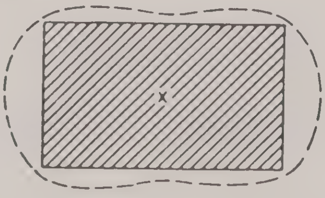


Figure 2c

Directional coverage pattern for rectangular area with station located off-center.

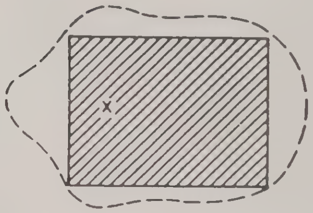


Figure 2d

Broad directional coverage pattern for station located along boundary edge of area.

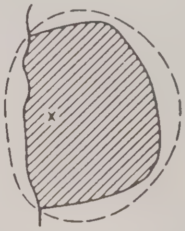
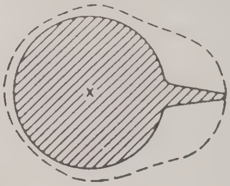


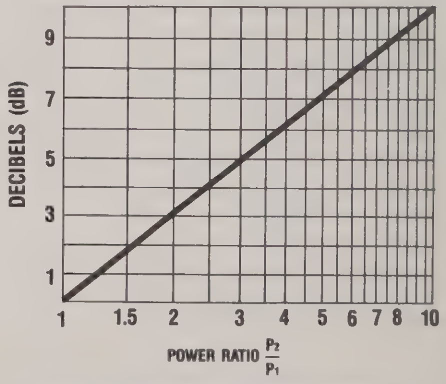
Figure 2e

"Keyhole" coverage pattern for general mobile coverage with extended range in one direction.



Antenna Gain

Gain probably is the most important characteristic of a two-way antenna. It is a figure of merit, providing that true and realistic ratings are used. The gain is, of course, relative to a reference or standard and is meaningless unless the reference is clearly defined. In two-way operations the half-wave dipole is the accepted standard reference for gain of base station antennas. Mobile antennas are normally referred to a $\lambda/4$ (quarter-wave) whip.



To find decibels (dB) for power ratios above 10 divide the power ratio into two factors and add dB of each.

Example:

Power Ratio of 15 = 5 × 3
dB = 7 + 4.8 = 11.8 dB

To find Power Ratio for dB above 10, find the power ratio for that part above 10 and multiply by 10.

Example:

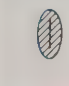
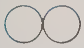
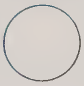
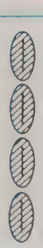
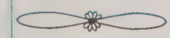
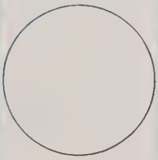
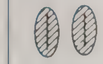
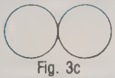
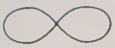
dB = 14 = 10 + 4
Power Ratio = 10 × 2.5 = 25

Relation of Gain and Aperture

The only effective method of increasing antenna gain is to increase the antenna size and effective aperture. A single half-wave dipole radiator has a given effective radiation area or aperture (See Figure 3a). By arranging a number of half-wave radiators in proper relationship and feeding them electrically so that their radiation will add, the gain of the array will exceed that of the single radiator. If vertical radiators are stacked vertically in line, the array will be omnidirectional and gain will be obtained from increased vertical aperture (See Figure 3b). This would be the equivalent of compressing the vertical pattern of 3a from a fat doughnut shape to a flatter doughnut shape of 3b. If spaced horizontally, the array will be directional with gain obtained from increased horizontal aperture (See Figure 3c). This would be the equivalent of compressing the horizontal pattern of 3a from a round shape to a Figure 8 directive shape of 3c.

For any given array, there is a spacing or stacking which will produce optimum gain in the main lobe at 0° elevation. Optimum gain generally does not occur at the same stacking for minimum secondary lobes but then, minimum secondary lobes are a relatively unimportant consideration for two-way antennas — especially where it means a sacrifice of gain in the main lobe.

In addition to the spacing between radiators (stacking factor), it is important that the individual radiators be properly fed. Maximum gain in the main lobe of a vertical array at 0° elevation is obtained when all radiators are fed in phase with equal power.

Aperture of Dipoles	Elevation Pattern	Azimuth Pattern
	 Fig. 3a Single Dipole	
	 Fig. 3b 4 Dipoles Vertically Spaced	
	 Fig. 3c 2 Dipoles Horizontally Spaced	

Limitation on Gain generally is dictated by size and cost. To double the gain (increase of 3 dB) it is necessary to double the aperture or size of the array. This doubling process soon reaches practical limitations of the size and cost of the array — especially in the 25-50 MHz region where a half wavelength radiator is around 12.5 ft. (3.81 m) long at 37 MHz.

Where antennas are stacked on the side of a tower to increase gain, consideration must be given to the fact that the decrease in effective height works against the increase in gain. Figure 4 shows how the gain increases with effective height. The effective height of the array is determined by the height of its center above the effective ground reflection area. If a tower looks over generally flat terrain, the effective height can be considered the same as the height of the array center above the base of the tower. If the tower sits on a hill, however, the effective height is the height of the array center above the base plus the height of the hill above average terrain. Perhaps two examples will bring this out more clearly.

Example 1:

Site: 150 ft. (45.7 m) tower, flat terrain

Frequency: 47 MHz (Wavelength: 21 ft. [6.4 m])

Question: What will be the relative gain of a 2 radiator (2 stack) side-mounted array compared to a half-wave antenna mounted up on top of the tower, with vertical separation between centers of stacked radiators of .85 wavelength? How will a 4 stack side-mount compare?

Answer:

.85λ = 18 ft. (5.49 m)

Radiator length = 10 ft. (3.05 m)

With the top radiator of the 2 stack array started at top of tower, and with 18 ft. (5.49 m) between centers, the bottom end of the bottom radiator will be at the 122 ft. (37.19 m) level on the tower. The array will then span 28 ft. (8.53 m) and its center will be at the 136 ft. (41.45 m) level on the tower.

Gain of array = 3.0 dB
Height loss in dropping from 150 ft. (45.72 m) to 136 ft. (41.45 m) (Fig. 4) = 0.8 dB
Net gain of 2 stack array over top half-wave antenna = 2.2 dB

The 4 stack array will span 3 × 18 +10 = 64 ft. (19.51 m)
Center height will be at tower level of 118 ft. (35.97 m)
Gain of array = 6.0 dB
Height loss in dropping from 150 ft. (45.72 m) to 118 ft. (35.97 m) (Fig. 4) = 2.0 dB
Net gain of 4 stack array over top half-wave antenna = 4.0 dB

Example 2:

Site: 150 ft. (45.72 m) tower on hill 300 ft. (91.44 m) above average terrain.

Freq: 47 MHz

Question: What will be the gain of the 2 stack and 4 stack arrays of Example 1 — compared to a half-wave antenna on top of the tower?

Answer: 2 stack array

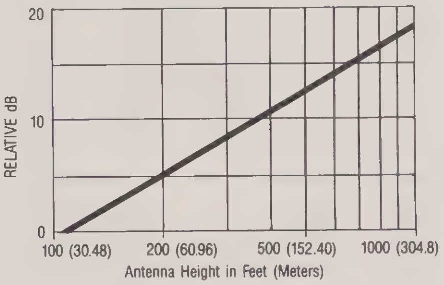
2 stack array gain spans 28 ft. (8.53 m)
Effective height of top tower is now 150 ft. (45.72 m) + 300 ft. (91.44 m) = 450 ft. (137.16 m)
Center of array is at height of 450 ft. (137.16 m) − 14 ft. (4.27 m) = 436 ft. (132.89 m)
Gain of 2 stack array = 3.0 dB
Height loss in dropping from 450 ft. (137.16 m) to 436 ft. (132.89 m) = 0.2 dB
Net gain of 2 stack array over top half-wave antenna = 2.8 dB

Answer: 4 stack array

4 stack array again spans 64 ft. (19.5 m)
Effective height of tower is 450 ft. (137.16 m)
Center of array is at height of 450 ft. (137.16 m) − 32 ft. (9.75 m) = 418 ft. (127.41 m)
Gain of 4 stack array = 6.0 dB
Height loss in dropping from 450 ft. (137.16 m) to 418 ft. (127.4 m) = 0.5 dB
Net gain of 4 stack array over top half-wave antenna = 5.5 dB

Figure 4. Height-Gain Graph 30-1000 MHz

Shows relative gain vs. antenna height. Takes into consideration line loss of .875" (22.23 mm) Foamflex. 0 dB at 50 ft. (15.24 m) is an arbitrary reference point. Increased line loss as higher frequencies is balanced by increased gain due to departure from plane earth propagation as tower height increases.



There are limitations, too, on length of arrays for 150 MHz and 450 MHz which are dictated by size and cost. The maximum mast projection above a tower top without specified lighting on the mast is set at 20 ft. (6.1 m) by FCC Rules. This pretty well limits the maximum gain of a 150 MHz omnidirectional array to 6 dB over a dipole or a 450 MHz omnidirectional array to around 10 dB over a dipole. The costs of lighting and the longer free-standing mast along with heavier duty tower requirements limit antennas which would extend more than 20 ft. (6.1 m) above the tower mostly to special applications.

Mobile Gain Antennas

For mobile antennas, gain is very much limited by mechanical considerations. Longer antennas having the aperture to produce gain cannot too often be mounted on the vehicle roof and still withstand the severe strain and impact of tree limbs, overpasses, or garage doors. Often when the gain antenna is deck or bumper-mounted it has no more effective performance than a quarter-wave whip in the roof.

Considering rear-deck mountings the maximum gain (free space) in practical size antennas will be in the order of 3 dB for 150 MHz and 5 dB for 450 MHz. Even then, the lengths required for these gains may be objectionable for many applications.

Receive vs. Transmit Gain (Station Antennas)

Although the antennas used in two-way are bilateral and have the same capabilities of gain for both transmit and receive, the gain may not always show up the same in performance due to directional distribution of noise picked up on receive.

If the antenna is directive into a noise source of higher intensity than surrounding ambient noise level little or no gain may be shown on receive over an omnidirectional antenna since it will bring up the noise with the signal. On the other hand, if it looks away from the noise and can use its front-to-back or front-to-side pattern discrimination to drop the noise much lower than ambient, it may show considerable improvement in signal to noise over that of just gain alone. Noise conditions must be taken into consideration when planning the receive performance of the system; otherwise gain antennas may not contribute as planned — especially in the 25 or 50 MHz region.

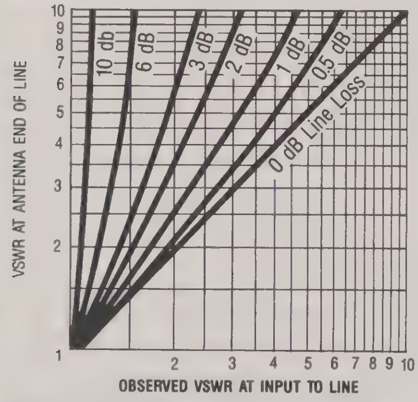
Measurement of gain

At VHF and UHF frequencies this is difficult and requires good equipment, technique and experience if the gain figures are to be accurate and meaningful. The two methods commonly used are (1) pattern integration and (2) comparative measurement to a standard or reference antenna whose gain is known. Pattern integration is accurate only if the losses in the feed system are taken into consideration. The comparative method is accurate only if the reference antenna gain is accurately known and proper technique and equipment are used in making measurements. In either method it is important to eliminate variations in propagation conditions and to make measurements in the far radiation field of the pattern with even distribution in the radiation field surrounding the antenna. Accuracy to within ± 0.25 dB can be obtained with proper control.

VSWR & Impedance

While gain cannot easily be measured in the field, the antenna VSWR is easy to check upon installation. The true VSWR is that at the antenna terminals and the VSWR at the end of the transmission line will be lower by the amount of attenuation in the line. For example, if the line has an attenuation of 3 dB a VSWR of 1.5 measured at the station end of the line will be a true VSWR of 2.3 at the antenna. Figure 5 shows a chart for converting VSWR at the end of the transmission line to VSWR at the antenna terminals for various line losses.

Figure 5



Graph to determine VSWR at antenna end of line from VSWR readings observed at input to line for various line losses.

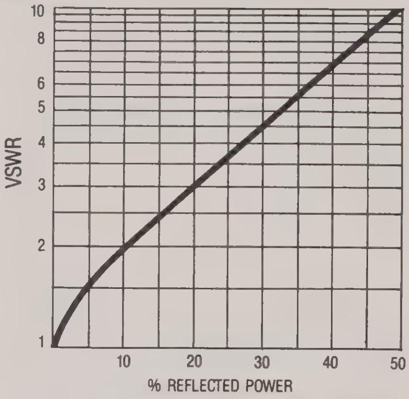
Example:

For line loss 2 dB, and observed VSWR of 1.7, the VSWR at antenna is 2.

For field measurement of VSWR it is convenient and sufficiently accurate to use inline watt meter readings with an instrument designed to cover the respective frequency range. (See graph of Fig. 6 for converting forward and reflected power to VSWR.) While these readings are not too accurate below 1.2, accuracy can be improved by reading up to at least mid-scale on both forward and reflected power by switching scales where scales are available. Accurate VSWR readings below 1.2 necessitate equipment of laboratory type such as spectrum analyzers and directional couplers.

The antenna should be essentially resonant at the operating frequency or frequencies so that its impedance is mainly resistive with minimum reactance, and should match the characteristic impedance of the transmission line. For two-way operations, coaxial lines with 50-ohm characteristic impedance are universally used so that the antenna then should be designed to a 50-ohm terminal impedance.

Figure 6



Calculate % reflected power from inline watt meter readings as follows:

% Reflected Power =

$$\frac{\text{(Reflected Power Reading} \times 100)}{\text{(Forward Power Reading)}}$$

Bandwidth

Bandwidth is becoming increasingly important as greater use is made of mobile repeater and duplex operations. If the station antenna has proper bandwidth characteristics, one antenna can be used for both transmit and receive functions through use of a duplexer unit at the equipment input. The use of a single antenna gives similar patterns for transmit and receive and overcomes the problem of compromising antenna pattern and gain with the second antenna side-mounted on a tower.

There are other advantages in bandwidth from operational standpoints. Broad band antennas detune less than do narrow band antennas under similar icing conditions. Adaptability to changes in frequency assignments and stocking requirements are further pluses for broad band antennas.

Bandwidth vs. Performance

This needs some clarification. There are some who feel that a narrow band antenna must have better performance on a specified single frequency than a broad band antenna — even when VSWR and gain figures are indicated equal at the specified frequency. This may stem from misapplication of gain bandwidth concepts to the problem.

Bandwidth is determined by the design of the radiator and feed system. The larger the ratio of radiator diameter to its length (up to a point) the greater the bandwidth. In two-way arrays, bandwidth is limited mostly, however, by the feed system. Increased SWR losses in the transmission line and feed system generally drop performance before gain would drop performance due to the bandwidth limitation of the radiators themselves. Unless feed systems are taken into consideration, gain bandwidth concepts cannot be applied, because some designs do not adapt to efficient broadband feeding.

Figure 7

Attenuation losses in dB/100 ft. (30.48 m) of line and maximum average power ratings in watts (1) for coaxial transmission lines commonly used with 2-way radio antenna systems.

	Frequency in MHz						
	30	40	50	72-76	150-170	450-460	800-950
RG-8/U	1.0 dB 1,100 w.	1.2 dB 1,000 w.	1.4 dB 900 w.	1.7 dB 800 w.	2.8 dB 500 w.	5.2 dB 300 w.	8.6 dB
RG-58/U	2.2 dB 450 w.	3.1 dB 350 w.	3.5 dB 300 w.	4.4 dB 250 w.	6.8 dB 170 w.	12.0 dB 80 w.	17.5 dB
½″ (12.7 mm) (2) **Foam (LDF)**	0.38 dB 3,400 w.	0.45 dB 2,900 w.	0.50 dB 2,700 w.	0.63 dB 2,200 w.	0.97 dB 1,500 w.	1.7 dB 800 w.	2.4 dB 580 w.
7/8″ (22.23 mm) (2) **Foam (LDF)**	0.20 dB 9,500 w.	0.23 dB 8,400 w.	0.27 dB 7,500 w.	0.33 dB 6,000 w.	0.45 dB 4,200 w.	0.88 dB 2,350 w.	1.38 dB 1,700 w.
1¼″ (31.75 mm) (2) **Foam (LDF)**	0.15 dB 17,000 w.	0.17 dB 15,000 w.	0.19 dB 13,000 w.	0.24 dB 11,000 w.	0.36 dB 7,200 w.	0.63 dB 4,100 w.	0.94 dB 2,700 w.
1-5/8″ (41.28 mm) (2) **Foam (LDF)**	.11 dB 25,000 w.	.15 dB 21,000 w.	.16 dB 20,000 w.	.19 dB 16,000 w.	.28 dB 10,000 w.	.54 dB 5,500 w.	.85 dB 3,300 w.
7/8″ (20.23 mm) (3) **Pressurized**	.2 dB 12,000 w.	.25 dB 10,300 w.	.26 dB 9,200 w.	.32 dB 7,300 w.	.5 dB 4,800 w.	.83 dB 2,800 w.	1.22 dB 1,900 w.
1-5/8″ (41.28 mm) (3) **Pressurized**	.11 dB 28,000 w.	.14 dB 23,000 w.	.16 dB 21,000 w.	.17 dB 17,000 w.	.25 dB 11,000 w.	.44 dB 6,200 w.	.68 dB 4,100 w.
2¼″ (57.15 mm) (3) **Pressurized**	0.09 dB 37,000 w.	0.11 dB 32,000 w.	0.12 dB 29,000 w.	0.14 dB 23,000 w.	0.22 dB 15,000 w.	0.38 dB 8,800 w.	0.57 dB 5,900 w.

(1) Power ratings are based on EIA standard RS-100 for a maximum inner conductor temperature of 100°C at 40°C ambient. Ratings should be divided by VSWR as measured at the input to the transmission line to account for hot spots.

(2) Low density foam dielectric, copper conductors.

(3) Air dielectric, copper conductors.

Mechanical Characteristics

While electrical characteristics determine antenna performance, mechanical characteristics are equally important in over-all considerations of the antenna system since they largely determine the life and serviceability.

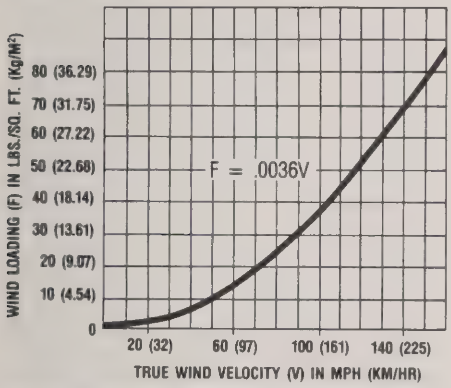
Station antennas often are mounted on tall towers where the expense of installation may equal or exceed the price of the antenna itself. It is important, therefore, that the antenna be capable of withstanding the environmental conditions of wind and ice without failure, and also be able to resist the weathering effect of atmospheres they are normally subjected to.

Mobile antennas, obviously, are limited in design considerations to their abilities to withstand the mechanical and fatigue forces imposed in use. Also, there are size and user convenience factors which further necessitate an electrical design which will best permit desirable mechanical characteristics.

Wind and Ice

Since two-way antennas are installed in all areas under various conditions of wind and ice, it is difficult to set a value of wind and ice loading which will satisfy the maximum or severe conditions without over designing with unduly high cost for those areas where severe conditions of wind and ice as encountered on some mountain tops must be handled by special ruggedized designs.

Figure 8



Wind load graph showing wind load in lbs./sq. ft. (kg/sq. m) vs. true wind velocity in miles per hour (mph) (km/hr).

To find total wind load, calculate the total maximum flat or projected area of the antenna and multiply by the lbs./sq. ft. (kg/sq. m) for the desired wind velocity rating. Equivalent flat area for a round member is calculated at ⅔ the diameter × length. The constant .0036 is a practical value for shapes used in 2-way antennas.

The force (F) or load that wind of a given velocity exerts on a flat surface having an area of one square foot is $F = KV^2$ lbs. where V is the true wind velocity in miles per hour, and K is a constant which depends on shape factor. This constant varies from around .003 up to .004 for most shapes used in two-way antennas. Round shapes have about ⅔ the wind drag of flat shapes.

The area that the antenna presents in any given direction is calculated in square feet and multiplied by F to obtain the total wind load. Round surfaces are calculated at ⅔ diameter dimension to obtain the equivalent projected flat area. In addition, the area often must be figured with .5″ (12.7 mm) radial ice because a .5″ (12.7 mm) diameter tube could become 1.5″ (38.1 mm) diameter. See Figure 8 for converting wind velocity to lbs. per sq. ft. (kg per sq. m) load.

The minimum design criteria for wind load in two-way should be to handle true wind velocities of 100 miles per hour (161 kilometers per hour) without ice and when feasible the design should be capable of handling stronger winds because many hurricane areas are subjected to winds in excess of 100 mph (161 km/hr). Where icing conditions are prevalent a separate loading should be calculated for .5″ (12.7 mm) radial ice with maximum wind velocity reduced because with such icing it is not usual to have hurricane force winds. The area should be the maximum area that the antenna could present to the wind, figuring that the wind could come from any direction.

Materials

The selection of materials which will be used in an antenna or array breaks down to materials for the component parts:

1. The radiating elements and support members
2. Insulators
3. Feed harness and connectors
4. Hardware and mounting

Radiating Elements and Support Members

In station antennas where size and weight must be considered aluminum alloys which combine high strength, low weight, good resistance to corrosion, and good conductivity are a natural choice in metals. Of these aluminum alloys, 6061-T6 is one of the well suited alloys because of its high strength and suitable properties for machining and working.

6061 is made up of approximately 96% aluminum with small amounts of silicon, iron, copper, manganese, magnesium, chromium, zinc and titanium. T6 is the temper designation and means that the alloy is solution heat treated and then artificially aged. It has a yield strength of around 35,000 lbs./sq. in. (24.4 kg/sq. mm) and compares favorably with the strength of many steels.

Pressure cast aluminum is very well suited to certain parts such as bases, sockets, mounts and clamps. It has higher resistance to corrosion than the high strength aluminum alloys while its hardness prevents metal "creep" undesirable in clamps.

Copper and brass also are frequently used where size and weight are not factors. Principal advantages are ease of plating and similar metal contacts with the feed cable.

Mechanical Failure

This generally occurs when wind and ice loads exceed the yield strength of the material or where metal fatigue occurs after long term cycling back and forth of a member due to wind vibrational forces. To lessen fatigue, all tubular members which are free standing and subject to vibration should be plugged or otherwise dampened to reduce vibration fatigue. The material shape and size should be selected so that the maximum forces imposed on it including fatigue — will be less than the yield point of the material. Experience is the best guide for proper safety factor.

Corrosion

This is an important consideration in metalic members and where dissimilar metals are brought into physical contact, care must be given to the materials used in order to avoid severe galvanic corrosion. Galvanic corrosion occurs as a speed up of corrosion where moisture is present between dissimilar metals causing electrical current flow between them similar to a battery or electroplating action.

Galvanic corrosion can be eliminated by the use of similar materials or by passivating the materials in contact by plating or chemical conversion treatment (alodine or irridite). Where dissimilar metals must be brought into contact under stress conditions where the surface of chemical conversion would be scratched or impaired, the metals should be close to each other in the galvanic series (see Table of Galvanic Series) so that galvanic action is very slow.

For example, copper or brass lugs should be zinc plated (not silver) for connection to aluminum, and steel clamps or mounts to aluminum should be hot dip galvanized (molten zinc). Copper or brass should never be placed in contact with aluminum without passivating or plating the metal surfaces in contact.

Table of Galvanic Series

Relative Position of Metals and Platings Commonly Used

(1) Magnesium
(2) Zinc
(3) Aluminum
(4) Aluminum Alloys
(5) Cadmium
(6) Steel or Iron
(7) Stainless Steel (active)
(8) Lead-Tin solders
(9) Lead
(10) Tin
(11) Nickel (active)
(12) Brass
(13) Copper
(14) Monel
(15) Silver
(16) Gold
(17) Platinum

Note: Low number is anode and high number cathode. Metal flows from low number to high number in galvanic action.

Water accumulation in hollow members can be avoided with drainage holes near the low point. Not only does this reduce corrosion but it protects against freeze bursting in cold weather.

Insulators

These include radiator support insulators, insulated element spacers or insulated stiffeners. In general, insulators should be avoided wherever possible since they are subject to breakage or damage and can deteriorate performance. And at the higher frequencies, they can introduce dielectric capacitance that produces higher antenna VSWR. Desirable qualities in such insulators are: low dielectric constant, low power factor (low loss) at the operating frequencies, low water absorption, ability to operate well within the temperature range without undue change, resistance to ultraviolet radiation from sunlight and to certain gases, mechanical strength, mechanical impact resistance, and workability in machining or moulding. Depending on application, certain of the newer urethanes, epoxies, and synthetic resins meet most of the basic requirements at reasonable cost.

Feed Harness

Feed harness or "feed" includes the transmission line (generally coaxial) from the antenna input terminal to the actual connection on the radiator(s). This includes all matching transformers and interconnections between radiators such as tees or multi-junction connections.

As in all antenna work, electrical and mechanical considerations are interlocking. While it might be desirable from some electrical considerations to have the feed system totally enclosed inside a support member, there are many drawbacks to such an arrangement from a mechanical and service standpoint. Often the latter must rule in the design, especially where electrical performance is not affected.

Since most antennas "work" mechanically under wind forces, the feed line itself cannot be rigid in most designs. Flexible coaxial cable, therefore, is a must for many applications. Flexible solid dielectric cables are availalbe in impedance values to suit most requirements. Life of the cables exposed to weathering is excellent if non-contaminating jacket cable such as RG-8A/U is used and if the polyethylene dielectric is properly protected from the sun's ultraviolet radiation — which cracks the exposed polyethylene. There is also the necessity of keeping water out of connectors and the line — the same as with any feed line.

A great advantage of the outside feed system is the ease of inspection and replacement. Also it facilitates re-orientation of radiator elements. Most flexible cables are insulated with a poly jacket which eliminates the problem of corrosion due to dissimilar metals between the cable and the antenna support members.

Weather-designed black poly electrical tape or vapor wrap probably is the best single protector against both ultraviolet and water entrance. (Black filters out ultraviolet.) Properly applied, they will endure both heat and cold and stand up over long periods of time. It is highly desirable to have all cables and all connections possible made up by the manufacturer with only those connections which are absolutely necessary left for field installation makeup.

Mechanical strain must be avoided on the cables and connectors. The inner conductors of small cable such as RG-58A/U should be given relief from direct strain. Sharp bends should be avoided in all cables.

Mechanical tees and multi-junctions generally may produce inferior performance compared to properly molded junctions due to capacitive reactance inherent in the design. Molded junctions also give maximum mechanical strength and seal out moisture.

Cable feed lines should be attached to support members at as many points as possible and yet allow the cable to "give" with member movement. Rigid clamping should be avoided both from the standpoint of deforming the cable and prohibiting a certain freedom in movement that generally is necessary. Polyester filament tape covered with aluminum tape will give firm mechanical support with excellent weathering capabilities. Insulated or "soft" clamps also can be used effectively for certain cable positioning.

Connectors & Termination

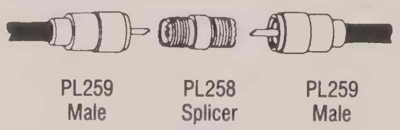
Outside of tees or multi-junctions, connectors are mostly male to female straight through (see Figure 9) or adaptors from one size or type of line to another. Some users prefer UHF types such as the PL259 male, while others like Type N. Make-up with Type N is from male to female, while make-up for UHF requires a double ended (female) splicer between males.

Type N and UHF connectors are suitable for use in mobile radio communications. However, UHF connectors should not be used above 300 MHz. Type N are better protected against water entry into the connector, but still should be taped for full protection. Adaptors are available between the two types so that the antenna connector can be mated to the transmission line connector. Type N or UHF fittings will handle maximum powers normally used in two-way.

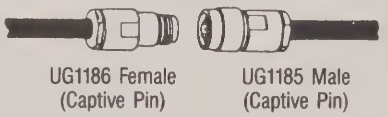
As in the case of fittings, there are preferences for antenna termination. Some users like the connector rigidly attached to the antenna support, while others prefer a flexible cable with fittings attached to its end. In either case, some flexible lead is desirable between the antenna and most transmission lines to facilitate installation and test. For this reason it appears logical to attach the flexible lead to the antenna. The flexible lead permits easier installation and facilitates testing and checking of the antenna and transmission line. It can be easily disconnected to isolate a problem between the line and antenna itself and permits convenient connection into another line if trouble develops in the line.

Figure 9

Make-up of UHF Connectors



Make-up of Type N Fittings



Hardware & Mounting

Small hardware such as bolts, nuts and rivets used for attachment of radiating elements or support members should be of sufficient strength and resistant to corrosion. Stainless steel meets these requirements and is desirable for many applications. High strength aluminum alloys also are suitable and offer some advantage for aluminum-to-aluminum connection where galvanic corrosion is a problem.

Heavy hardware such as clamps, orientation mounts and offset brackets, should be steel, protected with hot dip galvanize finish, or cast aluminum — depending on the application. Heavy directive arrays should incorporate into the mount a convenient means of orientation with positive position locking. Clamps and mounts should be heavy duty in order to transfer the full antenna load to the support tower or mast.

Stainless steel locking bands of the radiator hose type are very suitable for many attachments provided that they are properly applied. The draw-up screws should always be positioned so as to draw down against a firm member (preferably round) in order to force locking and holding of the screw to the band slots. Properly applied, these clamping bands are extremely strong and will maintain clamping force indefinitely. They offer a convenient means of fastening to various sizes and shapes of towers and masts.

Mounting and Phasing of Antenna Arrays

This covers the installation (in the field) of two or more separate antennas mounted on a tower, mast or wooden pole and interconnected to form a phased and matched array.

Polarity is the most important thing to watch out for in mounting. Make sure that the feed ends of the separate antenna either are all up or all down, or observe other polarity markings and instructions. Also observe that the same side (center conductor or shielded conductor) of the feed line is referred to in the up or down position. Otherwise the antennas can be mounted so as to effectively cancel radiation where it is desired — and VSWR and transmitter loading will give no indication that the antennas are not working properly.

Phase electrical is the next important consideration although the feed harness should be made up and properly marked by the manufacturer to eliminate any possibility of incorrect phasing during installation. **In phase** means that the lines should have the same velocity factor and be equal in length, or differing by an integral wavelength (1, 2, 3, 4, etc.). The electrical length will differ from physical length by the velocity factor of the dielectric material used to insulate the center conductor from the shield. For solid polyethylene dielectric lines such as RG-8/U, RG-11/U, and RG-83/U, the velocity factor is 66% so that a wavelength of line will be 66% as long as a wavelength in space. The velocity factor for most foamed lines commonly used is 81% while pressurized "hard line" will run from 86% to 92% (See manufacturer's rating).

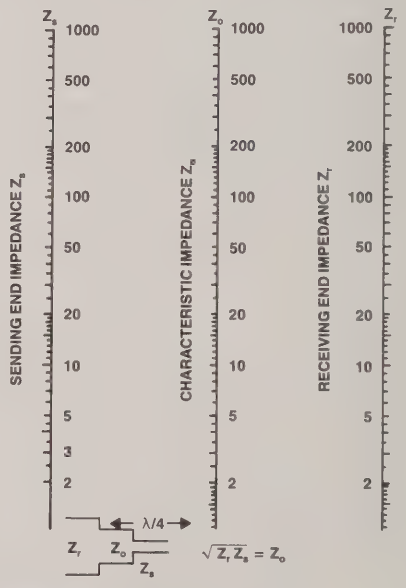


Figure 10
Impedance Transformation Chart

To find the transformer characteristic impedance (Z_o) required to transform one known impedance (Z_s) to another known impedance value (Z_r), lay a straight edge between the two known values and read off the required transformer characteristic impedance (Z_o). This transformer should be electrically one quarter wavelength, (λ/4), or a multiple of an odd quarter wavelength (such as 3λ/4, 5λ/4, 7λ/4. . .).

Spacing or Stacking: For optimum gain and performance, the centers of the antennas (radiator center) should be separated physically a given distance. This distance is not too critical but should be measured and held to within 10%. For most vertically stacked arrays optimum spacing will occur around 0.85 to 0.95 wavelength as measured between centers.

Matching: Each individual antenna of the array should be matched as nearly perfect as possible to its feed line so that its individual VSWR will be as close to 1:1 as possible. This is because the VSWR tends to add up when antennas are connected into an array. They all tend to be either slightly capacitive or inductive in reactance so that the reactive components add to increase VSWR of the array. When individual feed lines of equal impedance are brought together and paralleled, the junction impedance will be that of a single line divided by the number paralleled. Thus two antennas of 50 ohms will be 25 ohms, 3 will be 17 ohms, and 4 will be 12.5 ohms. A transformer is required to step up the impedance to 50 ohms in order to match the line. (See Figure 10 for transformer characteristic impedance required for transformation.)

Side-Mounted Antennas

Considerable work has been done at DB Products over the past years to develop side-mounted antennas which provide practical answers to the problems of tower reflection and shadowing resulting when standard omnidirectional antennas are mounted on an offset arm on the side of a tower. The first work was done in 1949 in the 25 to 50 MHz range and resulted in our DB212 series of side-mount antennas which provide omnidirectional and off-center pattern gain arrays.

Additional work was done in 1959 and 1960 in the 148-174 MHz range and resulted in our DB224 and DB228 150 MHz gain arrays.

Decibel Products carried out further development which resulted in the improvement of pattern shape for our DB212 series (DB212-3 and DB212-6) especially on large triangular towers. In the 1970s and 1980s computer programs were written for calculating azimuth patterns of omnidirectional antennas mounted at various spacings on several types and sizes of towers.

Directive Arrays Side-mounted will not be affected as omnidirectional antennas since most of the radiation is directed away from the tower or mast. The radiation back through the tower will be attenuated, of course, more than when mounted on top of the tower. Yagi antennas such as the DB230 and DB286 should be mounted so that the back reflector element will clear the tower structure by several feet and so that no tower member is closer to the radiator than the distance between the radiator and its reflector element.

Omnidirectional antennas and off-center pattern antennas (such as the DB224E and DB413) can be mounted on the side of a tower so as to take advantage of distance from the tower to shape the pattern. Greatest directivity out from the tower in the direction the antenna is mounted will be obtained when the distance measured from the center of the radiators to the nearest tower member is ¼ wavelength or ¾ wavelength. ¾ wavelength spacing out from the tower (practical only at 150 MHz and above) will give better radiation on the back (shadow) side of the tower compared to ¼ wavelength spacing, ½ wavelength spacing will give a bidirectional pattern with maxima along the line at right angles to the line between the antenna and the tower. ⅜ wavelength spacing will give a broad pattern with equal or better gain than when mounted on top of a tower — over a sector of approximately 120 degrees on either side (240 degrees total) of the line between the antenna and the tower. (See the patterns of the DB224 side-mounted on towers measuring 18″ [457.2 mm] to 24″ [609.6 mm] between legs.)

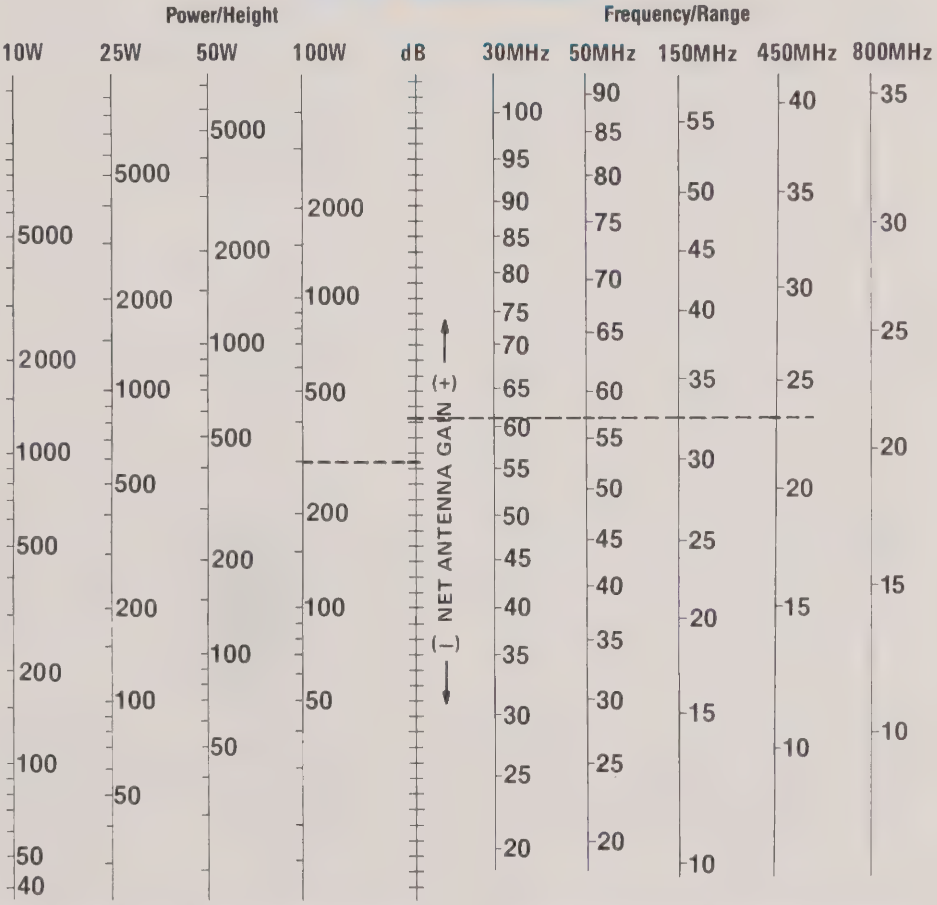
Omnidirectional Side-mount Arrays (25-50 MHz):
On square towers two folded radiators (DB212) are stagger-mounted on opposite legs of the tower with a vertical separation between centers of around 0.85 wavelength. The design provides for the radiators to be placed close to the tower leg to give a 50-ohm impedance for each radiator when so mounted. The radiators can be mounted on almost any parallel metalic member and still exhibit low VSWR. The pattern shape is nearly circular for tower sizes measuring up to ¼ wavelength between the diagonal legs — which includes the majority of guyed towers, and a number of self-supporting towers at the top levels.

For **triangular** towers measuring 18″ (457.2 mm) to 48″ (1,219.2 mm) between legs, the two-bay and four-bay arrays will give good circularity if mounted and oriented as shown on Data Sheet for DB212. On **larger size triangular** towers three-bay or six-bay arrays are recommended (see Data Sheets for DB212-3 and DB212-6) because they give a better balanced pattern.

Towers of large cross section will give less gain than smaller cross section towers, when side-mounted antennas are mounted to give omnidirectional patterns. This is due to increased losses in the tower and cross polarization radiation loss.

As the tower size approaches ½ wavelength between legs, there is considerable radiation from the horizontal members of the tower, and since this radiation does not contribute, it must be considered as a loss. Measurements made on a triangular tower measuring approximately ½ wavelength between legs showed the average horizontal polarized radiation only 6 dB to 10 dB down from the vertically polarized radiation. The horizontal component decreases as tower cross

The DB "Range Calculator"



This range chart is designed to assist you in finding the approximate talkout range to a mobile unit when the antenna height, transmitter power, and frequency are known.

There are many factors which determine accurately radio propagation characteristics and resulting coverage. These factors include seasonal changes, atmospheric conditions, local noise level and even sun spot activity. However, it is possible to obtain a rough indication of range in average rolling terrain for a given base station transmitter power, antenna gain and height using the range calculator.

The following steps explain the use of the DB Range Calculator when an estimate of range is needed for base station to mobile communications.

1. Subtract the transmission line loss and combiner, duplexer or filter loss (if used) from the antenna gain. This may be a plus (+) or minus (–) value and we call it NET ANTENNA SYSTEM GAIN.
2. Locate the transmit power column that most closely matches the power output of your base transmitter.
3. Move up this column until you find the height of your antenna (above average terrain).
4. At that point move across to the right until you intersect the NET ANTENNA GAIN column.
5. From that point move up or down the column by the number of dBs arrived at in Step 1.
6. Move across to the right until you find the column that represents the frequency band you are using. This figure will give you the approximate talkout range in miles for a 1 microvolt received signal level.

Example:

The facts are: Tower height is 300 ft. (91.44 m), 350 ft. (106.68 m) of ⅞″ (22.23 mm) foam cable, antenna gain is +6 dB; transmit power is 100 watts and the frequency range is 450 MHz.

1. .⅞″ (22.23 mm) Foam Cable has approximately .9 dB loss per 100 ft. (30.48 m) (3.5 × .9) = 3.15 dB.
2. +6 – 3.15 = +2.85 dB NET ANTENNA SYSTEM GAIN.
3. Using the 100 watt Column — move up to the 300 ft. (91.44 m) point.
4. Move across to the net gain column and then up 2.85 dB.
5. From this point move to the right to the 450 MHz column and we find a distance of 23 miles (37 kilometers).

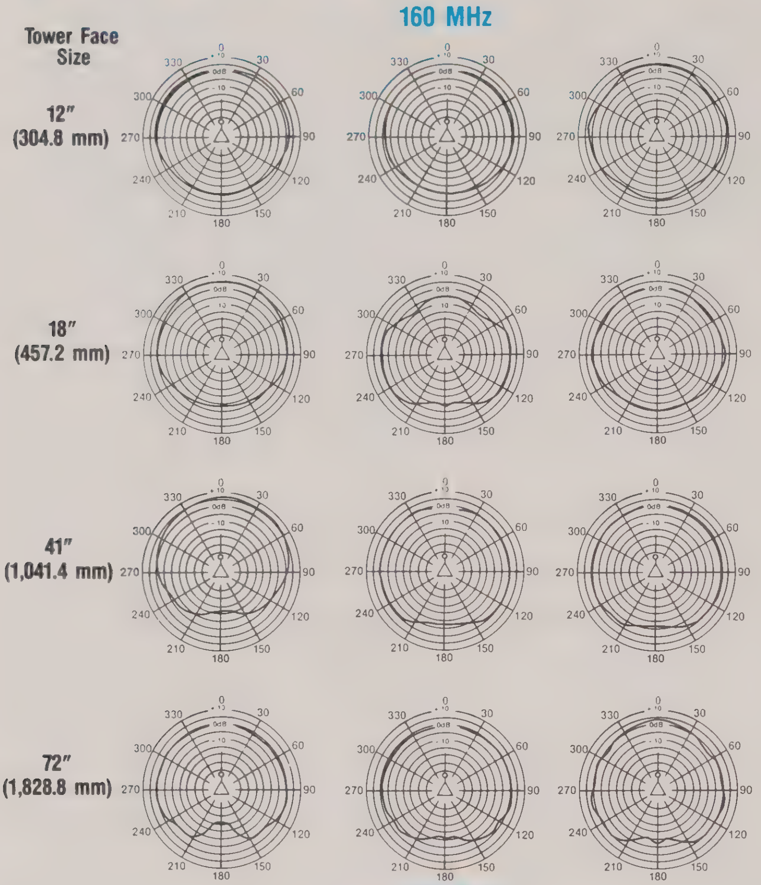
NOTE: Mobile antenna gain is not considered.

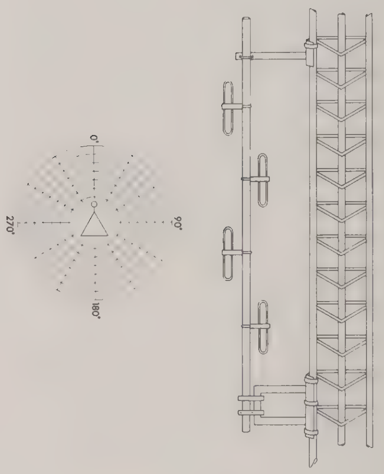
ENGINEERING CONTINUED

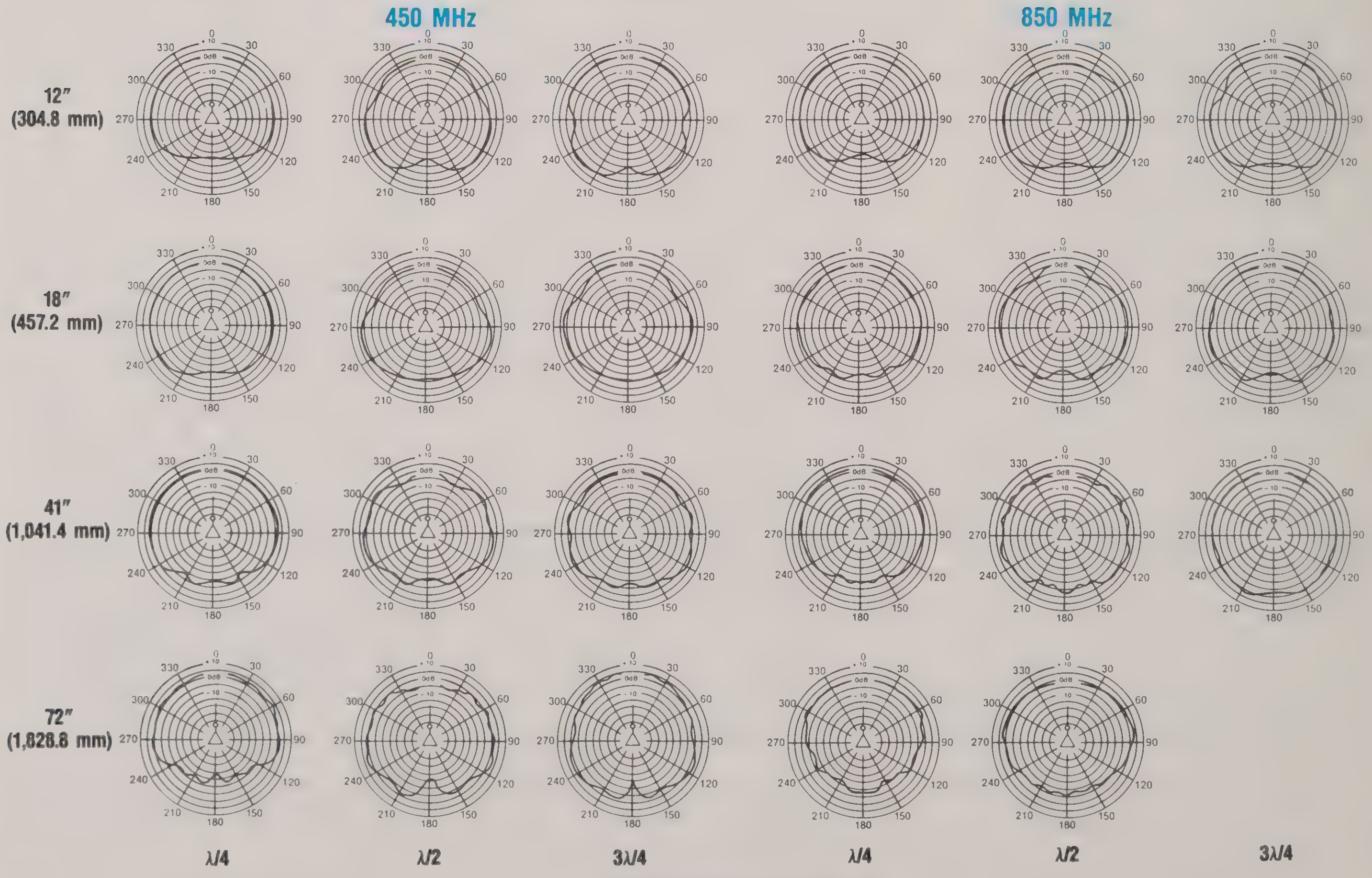
Omnidirectional Antennas Side-Mounted

The patterns shown here are horizontal radiation patterns for vertical polarized half-wave dipoles. If gain antennas are used, add the dB gain of the antenna to the pattern gain.

NOTE: These patterns are for estimating pattern shapes only and should not be used for system engineering purposes.







Antenna Spacing from Tower Leg

section decreases and becomes quite small for tower cross sections of ⅛ wavelength or less.

Mounting on Large Towers (½-¾ wavelength between legs)

Improved pattern shape over leg mounting is obtained by mounting the folded radiators on pipes attached to the middle faces of the tower. The pipes should be several feet longer than the radiator elements. The radiators should be mounted one to each tower face and staggered vertically about 0.85 wavelength between centers.

On collinear mounting of radiators — the tower size improves forward gain up to sizes measuring around ¼ wavelength between legs and then decreases up to ½ wavelength between legs. At ½ wavelength between legs there is considerable horizontally polarized radiation which must be considered as a loss.

Omnidirectional Arrays 150-174 MHz

It is considerably more difficult at 150 MHz than at 40 MHz to obtain omnidirectional patterns for side-mounted antennas because most tower cross sections are an appreciable part of a wavelength at 150 MHz. It is desirable to reduce the horizontal displacement between radiators to improve pattern circularity. This is accomplished by mounting the radiators on the middle of the tower face, with a radiator on each face. Staggering positions of radiators down the tower will enlarge the aperture and give somewhat increased gain.

Side-mounted Omnidirectional Antennas at 450 MHz and 800 MHz

At these frequencies standard towers have dimensions of several wavelengths and therefore become complicated reflectors. It is preferable at these frequencies when side mounting an omnidirectional antenna, to mount off the leg of the tower, rather than the face, and at a distance as far as practical. However, if the desired coverage area does not have to be circular, mounting the antenna at one quarter to five quarter wavelengths is often acceptable. Pattern nulls of 10 to 15 dB can usually be tolerated in areas where communication is not needed.

Trouble Shooting

This section is intended to help locate trouble in the station antenna system, either during installation or after the system has been in operation for some time.

It is assumed that the following factors outside of the antenna system has been evaluated:

(1) Rated transmitter power output on operating frequency.
(2) Rated receiver sensitivity on operating frequency, and receiver tuned to antenna.
(3) System (base and mobiles) netted on frequency.
(4) Receive ambient noise level (no signal) not too high.
(5) No interference condition.
(6) Propagation conditions normal.

General Procedures to Follow in Checking Station Antenna System.

During Installation

1. Make sure installer knows where antenna(s) mount on tower and which ends go up — if it is an array. The center of an array should be located so that the upper end of the line is positioned properly for connection to the antenna.

2. Make sure that the antenna connector will mate properly with the line termination — before installation is made. **Caution** installers about Type N-Male to Female Connectors — it is easy to misalign and force them together resulting in a short, intermittent, or poor connection.

3. Make an inspection of the antenna and line before they are installed. Check line for electrical continuity and clear it of a short.

4. Check VSWR as soon as possible after installation and, if possible, before installer leaves the job. Record the VSWR reading for future reference. Use a mobile unit on frequency if the station transmitter is not yet installed.

5. Make an operating range check as soon as possible with a distant mobile unit, or another station. Record 1st limiter or 2nd limiter reading from the station.

6. Record the 1st or 2nd limiter reading on ambient noise — with no signal being received. This should be checked at high and low noise level periods.

7. Make physical inspection of installation — preferably before installer leaves the job. Field glasses should be used if a physical inspection is not made. Be sure all connectors are taped and line is run and fastened properly.

Finding Trouble after Installation

1. Check VSWR at input end of line. If this checks materially higher (20% or more) than upon installation, there is trouble in the line or the antenna itself. If it is a long line or has losses of several dB, correct observed VSWR readings to see what the VSWR reading is at the antenna end. (See Figure 5)

2. If line checks high VSWR and continuity checks are in order, there is either an open or short. The open must be in the outside jacket if line shows continuity — the tower would carry the ground side on continuity check. If a short, likely it is at the antenna end of line. You will now need someone on the ground and someone else to climb and carry (if available), a 50-ohm power dummy load, ohmmeter, plus extra things like splicers, adaptors, tape, etc. Communication between tower and ground is almost a necessity — especially on high towers. An in-line wattmeter is required on the ground.

3. Make an inspection of the line while going up the tower, looking for physical damage such as bullet holes or breaks caused by tie wires. If none are apparent, proceed to end of line, disconnect antenna, and connect a dummy load to line. Check VSWR at the bottom with the wattmeter. If the line is good, reflected power will be virtually zero. If there is significant reflected power (5% or more), the trouble is in the line or the connectors. Look at the end connector of the line first. If it looks okay, the man at bottom removes line (open circuit) while the top man checks to see if line is clear of a short or leakage. Use high ohmmeter scale for this check. If it checks okay, short bottom end of line and check for open. If outer jacket of line has contact with tower, remember that the continuity check will not show up an open in the outer jacket — only the inner conductor. If the VSWR as read at the top is high, the trouble lies between the instrument and the antenna. Inspect the connector, adaptor, or splicer. If these look okay — proceed up to the next connection, checking each piece of line for open or short because likely the trouble is in the line or harness of the antenna. If the antenna feed lines check all okay, connect together again and make final VSWR check. If trouble has cleared, shake line around while watching reflected power reading to make sure there is no intermittent. If still okay, retape. Trouble probably was a connector not properly snugged up. If VSWR remains high, it will be necessary to take antenna down and repair or replace it.

Open or Shorts of Antenna End of Line

It is difficult to tell an open from a short by reading VSWR at input to line — unless the line has very low loss. In general, however, open lines tend to read a little higher than shorted lines. Here are some typical readings of VSWR at the input end of line:

Line loss 1.5 dB	**Line loss 3 dB**
Open VSWR = 8 to 1	Open VSWR = 2.8 to 1
Short VSWR = 7 to 1	Short VSWR = 2.6 to 1

Typical Antenna System Case Troubles

Case 1: Antenna is a 2-stack array with individual antennas mounted on the side of a tower. Antenna accepts full input power from transmitter and VSWR is low. The problem is that both the talkout and talkback range are **much** less than expected.

Since the antenna is accepting the power and therefore radiating, one of the antennas must be mounted upside down, throwing it out of phase with the other and effectively cancelling the next signal out at the horizon.

Case 2: A 150 MHz antenna mounted on top of a tall tower with 350 ft. (106.7 m) of .5″ (12.7 mm) Foam line (4.5 dB attenuation). Transmitter loaded into antenna and VSWR read 1.8. Range was very poor. Since there was around 4.5 dB attenuation in the line, the VSWR at the antenna end was 10 to 1 or higher. This indicated an open connection — probably the center pin not makng contact from the line to antenna connector.

Case 3: 150 MHz antenna was mounted on a tall TV tower with 500 ft. (152.4 m) of .875″ (22.23 mm) Foam line. VSWR checked somewhat high. Range was poor. Antenna was isolated from line and showed continuity but since the radiator had a DC return there was no convenient way to check antenna for short. The line was removed from antenna and checked. It showed continuity and no short.

Trouble was analyzed and later confirmed as an open in the outside aluminum jacket of the line. This did not show up on continuity check with top end of line shorted. The outer jacket had DC connection to the tower so that the tower provided connection across the break on continuity check. There was a break in the aluminum jacket where it had been cut on the sharp edge of the tower leg flange and then was broken with working.

Case 4: 450 MHz antenna installed on 100 ft. (30.5 m) tower with 120 ft. (36.6 m) of RG-8/U. System worked good upon installation with low VSWR. Range later found to be poor — especially on talkout. VSWR was higher (around 2 to 1) than upon installation. Lightning had flashed over in the UHF splicer at the antenna connection to the transmission line leaving a low impedance path which broke down on transmit. The splicer broke down before the cable since it was a good lightning fuse with the result that it saved cable from damage.

Case 5: 47 MHz 2-stack side-mount array mounted collinearly on tower leg. VSWR high and range poor.

Investigation revealed both elements mounted on top 20-foot (6.1 m) section of tower so that ends of half-wave radiators were almost touching.

Separated antennas 21 ft. (6.4 m) between centers by dropping the lower radiator down on the next lower tower section so that the top end was around 2 ft. (.61 m) below the guy point. VSWR came down to normal and range was good.

Case 6: 150 MHz gain antenna (omnidirectional) mounted down on side of tower with 30″ (762 mm) between legs. Range poor off of back side of tower. Attenuation on back side of tower is around 10 dB. Recommended replacement with a side-mount array of 3 sections with a section mounted in middle of each face.

Do's & Don'ts

DON'T mount skirts of coaxial antennas or ground rods of ground planes right down on the top of the tower. Keep them at least 18″ (457.2 mm) clear of the top.

DON'T trim off any cable (even if it looks extra) from an antenna or array feed harness. It may be a critical length such as a matching transformer or phasing length.

DO check connector between antenna and line for water — or lightning breakdown. If UHF fittings are used, check the splicer first.

DO inspect a pressurized line for water or moisture if it has lost pressure. Rain or moist air may have entered line. Repair leak and **purge line** with dry air or nitrogen before repressurizing.

DO make sure all outside connectors are snug and properly taped over with cold weather poly tape.

DO watch carefully in mating Type N-Male to Female Connectors so that the pin of the male is lined up and not at an angle with the female — when pushed together.

DO check antenna changeover relay **first** before suspecting antenna trouble.

DO protect antennas from lightning wherever possible. Directional antennas mounted on a pipe can be protected by letting the pipe extend several feet above the antenna. All antennas themselves should have a good heavy duty DC path to the tower or ground.

DO protect systems against precipitation static (mostly 25-50 MHz) by use of side-mount antennas and/or wrapping elements with good heavy duty continuous overlap wrap of cold weather poly electrical tape. Wrapped side-mount antennas will give maximum protection where this is a problem.

DO make sure all tubular radiator elements are plugged to prevent undue wind vibration fatigue.

DO make sure all vertical tubular elements have drain holes near bottom so water can drain out. Otherwise water can freeze and split element.

DO check antenna VSWR upon installation and make record to compare on future checks.

DO check transmission line and connectors for open or short before suspecting antenna trouble since connectors and line are more subject to damage and trouble resulting from installation.

Do's & Don'ts

(Applies especially to 800 MHz systems.)

DON'T use UHF (PL259) connectors in an 800 MHz system.

DON'T forget to check that antenna is plumb — especially high gain antennas. Even a few degrees of physical tilt will cause the radiation pattern to down-tilt on one side and up-tilt on the other side.

DON'T expect to get omnidirectional coverage when side-mounting an antenna, or when installing it on a cluttered rooftop.

About Interference

Heavy loading of available frequency channels in most large industrial and metropolitan areas has produced increasing problems of interference. The most common forms of interference are transmitter noise, receiver desensitization and intermodulation interference.

Transmitter Noise

Most of the output power of a transmitter is confined within the narrow band of frequencies on the assigned transmit channel. Unfortunately, some of the power is also radiated on other frequencies above and below the carrier frequency. This undesired radiation is referred to as "transmitter noise". Sufficient noise energy is radiated from the typical transmitter to degrade the performance of a receiver operating several MHz and/or several thousand feet away. To the receiver, transmitter noise appears as "on channel" noise interference and *cannot* be filtered out at the receiver. It falls exactly on the receiver's operating frequency and competes with the desired signal. Transmitter noise interference can be reduced or minimized by installing bandpass cavity or notch filter devices at the transmitter.

Receiver Desensitization

For optimum performance, critical voltage and current levels exist at certain points throughout the front end stages of a receiver. If these levels are radically changed, the performance of the receiver will be erratic and degraded at its operating frequency. Since the front end of the typical receiver used in our industry is quite broad, the receiver performance will be degraded whenever a strong "off-frequency" carrier from a nearby transmitter is received by the receiver. A transmitter can be operating several MHz from the receiving frequency and/or be located several thousand feet from the receiving antenna and still cause interference to that receiver. Receiver desensitization can be minimized or eliminated by installing bandpass cavity or notch filter devices at the receiver to sharpen selectivity and thus make the receiver less responsive to off-frequency signals.

Intermodulation Interference

Whenever two or more signals of different frequencies "mix" in a non-linear device, a number of new frequencies known as intermodulation products are generated. Intermodulation interference requires at least two transmitters to be on the air at the same instant on frequencies that have a definite relationship to the offended receiver frequency. Very often, the IM product can be heard as intelligibly as if one of the interfering stations were exactly on the operating frequency of the offended receiver. IM interference can often be identified by noting that the interfering signal may cease right in the middle of a conversation — when one of the offending transmitters ceases to transmit. Some of the more common forms of mixing are illustrated in the following examples.

(A, B, and C are the two or three mixing frequencies and F_{IM} is the frequency of the IM product created.)

$2A - B = F_{IM}\ 2\,(152\text{ MHz}) - 151\text{ MHz} = 153\text{ MHz}$

$2B - A = F_{IM}\ 2\,(151\text{ MHz}) - 152\text{ MHz} = 150\text{ MHz}$

$A + B - C = F_{IM}\ 49\text{ MHz} + 44\text{ MHz} - 45\text{ MHz} = 48\text{ MHz}$

$3A - 2B = F_{IM}\ 3\,(456\text{ MHz}) - 2\,(451\text{ MHz}) = 466\text{ MHz}$

$3B - 2A = F_{IM}\ 3\,(158\text{ MHz}) - 2\,(157\text{ MHz}) = 160\text{ MHz}$

The most common "non-linear device" where the frequency mixing occurs is the front-end circuit of the offended receiver. If two or more signals enter the receiver on their respective frequencies, the signals can mix together in the circuity of the receiver and produce IM products within the receiver. If one of these IM products happens to fall on or near a frequency to which the receiver is tuned, this product will be audible, often intelligible. The two or more offending transmitters might be located a considerable distance away. Usually, one of the offending transmitters will be located within a few miles of the receiver but the other offending transmitter may be 10 to 20 miles (16 to 32 kilometers) away. With receiver intermod, the problem must be cured at the point of mixing — at the receiver — by reducing or minimizing the level of one or more of the mixing frequencies before the signals enter the receiver.

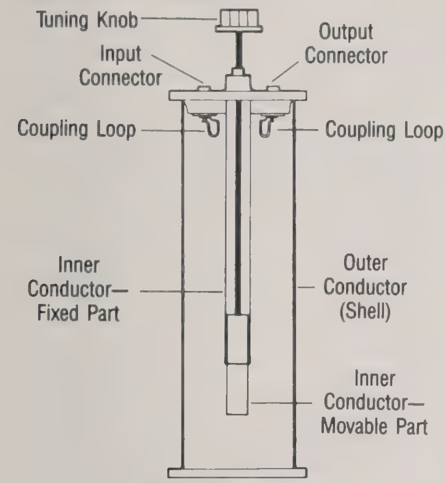
The second most common "non-linear device" where frequency mixing takes place is the non-linear final amplifier circuit of a transmitter. If two or more transmitters are located in close proximity (usually within a few blocks), energy from one transmitter can enter the amplifier circuit of the other, mix with the other frequency, and cause a resultant intermod product to be radiated by the transmitter along with the fundamental carrier energy. Transmitter intermod is more prevalent when large numbers of transmitters are grouped together on towers and building tops. With transmitter intermod, the problem must be resolved at the point of mixing — at the transmitter — by reducing or minimizing the level of one or more of the mixing frequencies as the signal enters the transmitter circuit.

Bandpass Cavity Filter

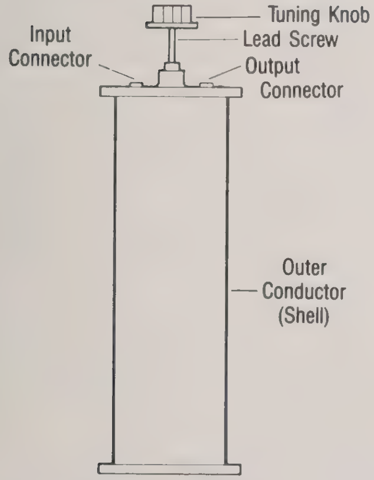
The bandpass cavity is a high Q resonant circuit designed to pass a narrow band of frequencies with very little loss while attenuating all other frequencies to some degree. As the frequencies become further removed from the resonant frequency of the cavity, they become more attenuated. The narrow band of frequencies that pass through with only slight loss are within a few kHz of the cavity's resonant frequency. Energy is fed into the cavity by means of a coupling loop which excites the resonant circuit formed by the inner and outer conductors. The second loop couples energy from the resonant circuit to the output. Selectivity response of the cavity will improve significantly as the coupling loops are changed to a higher insertion loss of the desired frequency (from 0.5 dB to 1 dB, etc.). Coupling loops that can be rotated to achieve different insertion loss settings are much more convenient than loops that must be replaced. If a single cavity will not provide sufficient attenuation to an undesired signal, additional cavities can be added in series to improve selectivity. It should be noted that a multi-cavity combination is more efficient than a single cavity. For example, a three-cavity combination with loops set at 1 dB (3 dB total insertion loss) will have greater selectivity than a single cavity with loops set at 3 dB.

The use of a bandpass cavity tuned to the receive frequency and installed between the antenna and the receiver will improve receiver selectivity. The cavity will reduce or minimize off-frequency signals that might otherwise pass into the receiver front-end circuits to cause receiver desensitization or intermodulation interference.

Use of a bandpass cavity tuned to the transmit frequency and installed between the transmitter and antenna will reduce spurious signals and/or transmitter sideband noise that might otherwise be radiated from the transmitter and degrade the performance of a nearby receiver. The use of bandpass cavities in the transmitter circuit may also reduce or minimize transmitter intermod interference since all off-frequency signals from other nearby transmitters will be attenuated as they try to pass through the cavity to the transmitter final circuits.



Selective Cavity Filter Interior



Selective Cavity Filter Exterior

Notch Filters

The band-reject cavity filter, or notch filter, is a high Q resonant circuit designed to attenuate a narrow band of frequencies while allowing all other frequencies to pass through with only slight loss. Basically, it is the opposite of a bandpass cavity. Energy at the resonant frequency of the notch filter "sees" the filter as a trap and is coupled to, and dissipated in the filter. Maximum attenuation occurs at the resonant frequency of the filter while all other frequencies are attenuated to a lesser degree, depending on their distance from the resonant frequency. The notch filter provides a given amount of attenuation at resonance regardless of the separation between the "pass" and "reject" frequencies. The filter can be tuned so that the narrow band of rejected frequencies can be several MHz from the desired pass frequency or quite close. Notch filters can be added in series to obtain additional attenuation to an undesired frequency.

As in the case with the bandpass cavity, notch filters can be used with transmitters to reduce or minimize transmitter noise radiation and transmitter intermodulation interference. They can be used with receivers to reduce or prevent receiver desensitization and to reduce or prevent receiver intermodulation interference. But it should be remembered that a notch filter provides maximum attenuation only at a specific, relatively narrow band of frequencies. The single, most important feature of a notch filter is its ability to reject an undesired frequency that is extremely close to the desired frequency.

Bandpass Cavity or Notch Filter?

The choice between the use of a bandpass cavity versus a notch filter to solve a particular interference problem is dependent on several system factors too involved to cover here. Nevertheless, certain general statements will apply in all cases:

(a) A bandpass cavity is the best choice for solving an interference problem if the nature of the interference and/or the frequencies of the interfering signals are not known.

(b) The notch filter will generally provide greater attenuation to an undesired frequency than a bandpass cavity of comparable size when the separation between the desired and the undesired frequencies is less than about 1 MHz (30-50 MHz band), less than about 3 MHz (148-174 MHz band), or less than about 3 MHz (450-512 MHz band).

(c) The bandpass cavity will generally provide greater attenuation to an undesired frequency than a notch filter when the separation between the desired and the undesired frequencies is greater than the values mentioned in (b) above.

(d) A notch filter can be field-converted into a bandpass cavity, or vice versa, by ordering a modification kit from the factory. Contact factory for details.

If in doubt as to the proper use of bandpass cavities or notch filters, contact Decibel.

About Duplexing

Need for Isolation

In every duplex system, the receiver must be adequately isolated from its transmitter if normal receiver performance is to be expected. Isolation (expressed in dB) is required to protect the receiver from (1) transmitter spurious and noise radiation and (2) receiver desensitization. A transmitter generates undesired energy over a broad band of frequencies above and below its carrier frequency. Sufficient noise energy is generated by the typical transmitter to degrate the performance of a receiver operating several MHz and/or several thousand feet way. In addition, whenever energy from a strong "off-frequency" transmitter carrier enters the broad front-end stages of a receiver, the receiver will become desensitized and provide erratic performance at its operating frequency. Both of these forms of interference must be minimized in a duplex system since the transmitting frequency will be fairly close to the receiving frequency and the transmitting antenna will usually be close to — possibly the same as — the receiving antenna. The amount of isolation required to protect a receiver from its associated transmitter is related to the separation between the transmit and receive frequencies. As the frequency separation is decreased, the isolation must be increased if normal receiver performance is to be expected. The isolation requirement is also dependent upon the individual characteristics of the transmitter and receiver, which vary with manufacturer and model. The specific isolation requirements of a particular duplex station can best be determined by contacting the manufacturer of the radio equipment.

Isolating the Transmitter and Receiver

Once the amount of isolation required for a duplex station is determined, this isolation can be achieved by either (1) using two antennas separated by a given distance or (2) using appropriate duplexer.

Horizontal Antenna Separation

Because of the propagation loss of a radio signal as it travels through space, the transmitting and receiving antennas can be horizontally displaced a given distance to obtain a given amount of isolation. If the distance between the two antennas is great enough, the receiver will be completely protected from its associated transmitter (i.e., protected from desensitization and from transmitter noise).

Vertical Antenna Separation

As another means of isolating the receiver from the transmitter, it is more effective, more convenient and thus more often used than horizontal separation. The same tower is generally used for both antennas, one antenna being mounted a given distance above the other. In addition to the isolation provided by space attenuation, a duplex system with vertically separated antennas achieves extra isolation as a result of the null (lack of gain) that exists above and below the typical vertically polarized antenna. (See charts).

Advantages of a Duplexer

In lieu of two antennas, a duplexer can be used to achieve the required isolation between the transmitter and receiver. With the use of a duplexer, the transmitter and receiver can be connected to a single antenna, thus eliminating the need for the second antenna and transmission line. In addition, the use of a single antenna assures the same radiation pattern for both transmitter and receiver which might otherwise be impossible to achieve. Finally, the use of a single antenna simplifies the search for a suitable location for mounting the antenna.

Selecting a Duplexer

Duplexers are available in a variety of models and, typically, several of the models might appear to meet the requirements of a particular duplex station. Basically, there are three distinct types of duplexers used in the two-way radio communications industry: the bandpass duplexer, the band-reject duplexer, and the bandpass/band-reject duplexer. Each type has its advantages and disadvantages, and each of these basic types are described briefly in the following paragraphs. Whatever the type, the duplexer selected must meet certain requirements if optimum system performance is to be achieved.

A duplexer must:

(1) Be designed for operation in the specific frequency band in which the duplex system operates — obviously.

(2) Be capable of handling the output power of the transmitter.

(3) Be designed for operation at, or less than, the frequency separation between the transmit and receive frequencies.

(4) Provide adequate rejection to transmitter noise occurring at the receive frequency. It is satisfactory to have too much rejection but not too little.

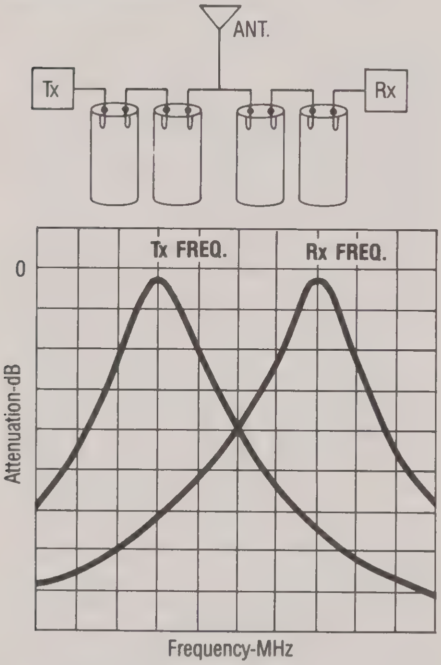
(5) Provide sufficient isolation to prevent receiver desensitization. Again, too much isolation is satisfactory, but inadequate isolation will result in degradation of receiver performance.

And for greater efficiency, the duplexer should offer as little insertion loss as possible to the desired transmit and receive frequencies.

Losses through the Duplexer

The output signal from the transmitter and the incoming signal to the receiver are both reduced somewhat by losses in the duplexer. These losses (expressed in dB) are referred to as "insertion loss" on the duplexer specification sheet. Generally, the insertion loss will increase as the separation between transmit and receive frequencies is decreased. For the transmitter, insertion loss values of 0.5 dB, 1.0 dB and 2.0 dB correspond to a reduction of output (watts) of approximately 11%, 20% and 37%, respectively. For the receiver, insertion loss values of 0.5 dB, 1.0 dB and 2.0 dB mean a reduction of 5%, 11% and 20% to the signal strength (microvolts) of the incoming signal.

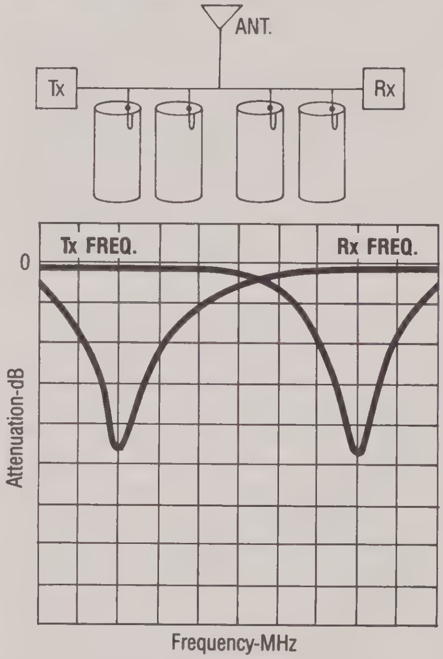
Bandpass Duplexer



It is so called because it includes the use of bandpass cavities interconnected in a duplexer configuration. It is considered by many to be the best choice of all duplexer types because of the overall protection it provides. The bandpass duplexer not only prevents the receiver from being desensitized by its associated transmitter, but provides some degree of desensitization protection from all other transmitters in the area as well. Transmitter spurious and noise radiation that would otherwise occur at the frequency of the associated receiver is attenuated by the duplexer. In addition, the duplexer attenuates noise energy being radiated by the transmitter on other frequencies as well and this characteristic provides some degree of protection to other receivers in the area. It is very effective in reducing or eliminating intermodulation interference in the front-end circuits of the receiver. For these reasons, the bandpass duplexer is ideally suited for use in most duplex systems, particularly those located in frequency congested areas.

The bandpass duplexer is a relatively simple device — simple to install, simple to tune — and requires very little maintenance. In comparison with other types of duplexers, the bandpass type tends to have slightly higher insertion loss at the desired transmit and receive frequencies. The duplexer is not suitable for use in duplex systems with "close" spacing between transmit and receive frequencies. At reasonable insertion loss levels, the bandpass duplexer cannot effectively attenuate frequencies near the resonant frequency. Maximum attenuation occurs only at frequencies far removed from the resonant frequency. This characteristic limits the use of the bandpass duplexer to systems with "wider" frequency separation.

Band-Reject Duplexer



As would be expected, this type of duplexer consists of band-reject filters (notch filters) interconnected in a duplexer configuration. It is probably used more often than any other type because of its compact size, low insertion loss at the desired transmit and receive frequencies and excellent isolation features. This type of duplexer is generally suitable for use in systems with wide or close spacing between transmit and receive frequencies. Many of the band-reject models include the shorter helical cavity filters and these models can usually be mounted inside the radio equipment cabinet.

Unlike the bandpass type, the band-reject duplexer does not alter the overall transmitter noise output. Instead, it selectively attenuates transmitter noise at the critical band of frequencies at and near the receiver frequency. In addition, the band-reject duplexer does not change the overall receiver selectivity response characteristics. It changes only a portion of the selectivity response and makes the receiver unresponsive to the critical band of frequencies at and near the transmit frequency. A band-reject type duplexer is designed primarily to protect the receiver from its associated transmitter. If the duplex system is located in a frequency congested area, additional protection to and from other stations in the area might be required. Additional protection can be accomplished by using one or more bandpass cavities between the transmitter and duplexer and between the receiver and duplexer.

Bandpass/Band-Reject Duplexer

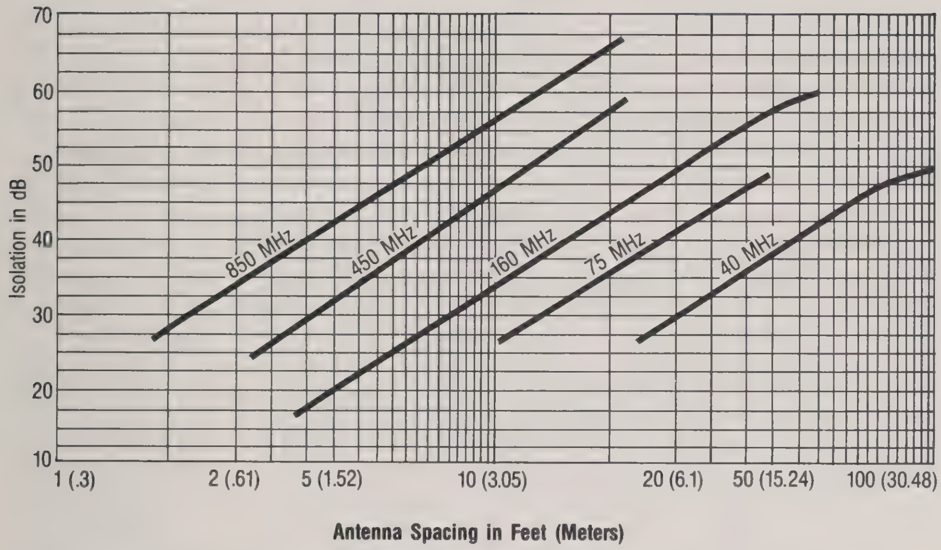
As the name implies, this type of duplexer is a combination of the other two types, incorporating the advantages and essentially eliminating the disadvantages of the two basic types. The cavity used in this type of duplexer is a bandpass cavity but also contains a secondary tuned circuit which provides a notch that is adjustable in frequency separately from the bandpass tuning rod.

More about Frequency Separation

Duplexers are generally rated as being suitable for use at a certain minimum frequency separation such as "3 MHz or more". If operated at closer frequency spacing than recommended, the duplexer will probably have inadequate isolation, excessive insertion loss at the desired frequencies, or both. Duplexers necessarily must be specified as being suitable for use at a given frequency separation when used with a "typical" duplex station. As pointed out previously, the isolation required between a transmitter and receiver at a given frequency separation will vary with manufacturer and model. If a particular duplex station is not "typical" and requires greater isolation than normally expected, the standard duplexer might have to be replaced with one offering greater isolation and/or different frequency response characteristics. If in doubt as to the amount of isolation required at a certain frequency separation, contact the manufacturer of the radio equipment. The duplexer manufacturer might be of help but the radio manufacturer is the ultimate source for this information.

Isolation Provided by Antenna Separation

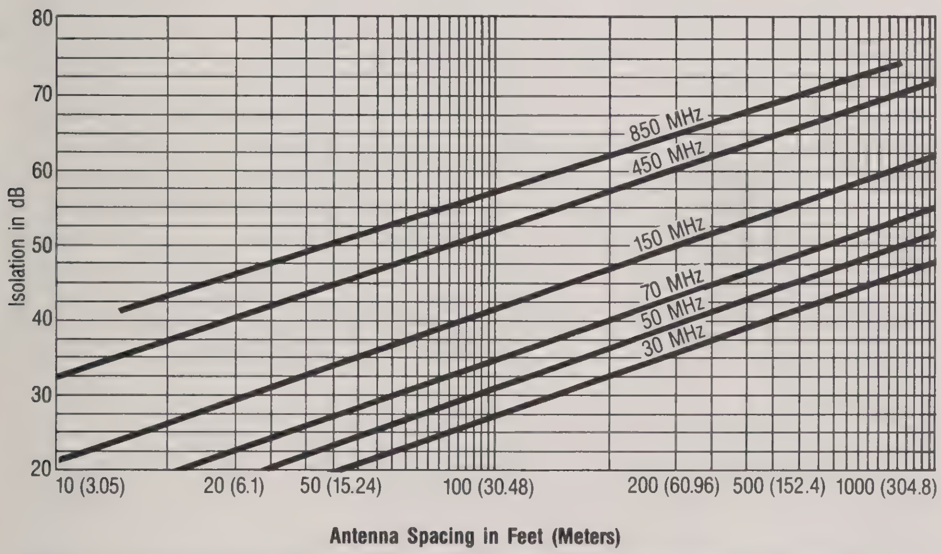
Attenuation Provided by Vertical Separation of Dipole Antennas



The values indicated by these curves are approximate values because of coupling which exists between the antenna and tower transmission line.

Curves are based on the use of half-wave dipole antennas. The curves will also provide acceptable results for gain type antennas if (1) the spacing is measured between the physical center of the antennas and if (2) one antenna is mounted directly above the other, with no horizontal offset (exactly collinear). No correction factor is required for the antenna gains.

Attenuation Provided by Horizontal Separation of Dipole Antennas



Curves are based on the use of half-wave dipole antennas. The curves will also provide acceptable results for gain type antennas if (1) the indicated isolation is reduced by the sum of the antenna gains and if (2) the spacing between the gain antennas is at least 50 ft. (15.24 m) (approximately the far field).

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